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WILDLIFE REVIEW

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor.

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SOILS

Culver, James R. SOIL SURVEY OF KAY COUNTY, OKLAHOMA. SCS. ii + 86 p., 25 figs. + single-fold maps based on aerial photos and bound in. Dec. 1967. Sold by Supt. Documents. WR 129: 2
With a section on wildlife and fish.

Horton, Robert E. SOIL SURVEY OF SCOTLAND COUNTY, NORTH CAROLINA. SCS. ii + 70 p., 18 figs. + single-fold maps based on aerial photos and bound in. Oct. 1967. WR 129: 2
With a section on the use of the soils for wildlife.

Petro, James H., and others. SOIL SURVEY OF ROSS COUNTY, OHIO. SCS. ii + 168 p., 11 figs. + single-fold maps based on aerial photos and bound in. Nov. 1967. WR 129: 2
With a section on wildlife.

Schermerhorn, Edward J. SOIL SURVEY OF MADISON COUNTY, INDIANA. SCS. ii + 89 p., 14 figs. + single-fold maps based on aerial photos and bound in. Mar. 1967. WR 129: 2
With a section on wildlife management.

Swafford, Bill. SOIL SURVEY OF GARFIELD COUNTY, OKLAHOMA. SCS. ii + 57 p., 12 figs. + single-fold maps based on aerial photos and bound in. Oct. 1967. Sold by Supt. Documents. WR 129: 2
With a section on wildlife.

Thomas, W. E., Jr., and others. SOIL SURVEY OF CARROLL COUNTY, VIRGINIA. SCS. ii + 109 p., 9 figs. + single-fold maps based on aerial photos and bound in. Dec. 1967. WR 129: 2
With a section entitled: Soil interpretations for wildlife habitat.

Threlkeld, George, and Stanley Alfred. SOIL SURVEY OF IONIA COUNTY, MICHIGAN. SCS. ii + 167 p., 8 figs. + single-fold maps based on aerial photos and bound in. Dec. 1967. WR 129: 2
With a section on wildlife.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Bailey, James A. EFFECTS OF SITE EXPOSURE AND DEER BROWSING UPON THE QUANTITY AND PROTEIN-QUALITY OF WITCHHOBBLE BROWSE. N.Y. Fish & Game J. 14 (2): 193-198, 2 figs. July 1967. WR 129: 2
[Ill. Nat. Hist. Surv., Urbana.] Abstract: The nature of witchhobble browse was studied in a spruce flat-mixed wood habitat on the Huntington Wildlife Forest in the Adirondack region of New York. Quantity of browse was

positively correlated with site exposure, apparently because snow accumulation on sites exposed by openings in the tree canopy prohibited excessive browsing by deer. Crude-protein concentration in both bud- and stem-portions of browse was negatively correlated with the quantity of browse per milacre. It is suggested that reduction in browse quantity caused by excessive browsing is, to a small degree, compensated by an increase in nutrient-concentration within the browse.

Lyon, L. Jack. ESTIMATING TWIG PRODUCTION OF SERVICEBERRY FROM CROWN VOLUMES. J. Wildl. Mgmt. 32(1): 115-119. Jan. 1968. WR 129: 3
[Forest Sciences Lab., Missoula, Mont.] Abstract: Shrub crown measurements, when converted to an expression of volume and combined with twig production data from only 20 clipped plants, provide a fast and acceptably accurate method for measuring browse production. The correlation between twig production and crown volume is very strong on undisturbed sites, and the regression technique has produced promising results in tests on serviceberry in western Montana.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Banks, Richard C. TERRESTRIAL VERTEBRATES OF ANACAPA ISLAND, CALIFORNIA. Trans. San Diego Soc. Nat. Hist. 14(14): 175-188. 1966. [From Biol. Abstr. 48(23), 1967.] WR 129: 3
[San Diego Nat. Hist. Museum, San Diego, Calif.] The known terrestrial vertebrate fauna of Anacapa Island includes 1 sp. of amphibian, 2 spp. of reptiles, 69 of birds, and 5 of mammals. The occurrence of 35 of the bird species is reported here for the first time. Only 28 spp. of birds are known or presumed to have occurred as nesting species.

Jackson, James B. THE WILDLIFE FOUND IN THE DELAWARE BASIN BY THE EARLIEST EXPLORERS, TRADERS AND SETTLERS. Del. Conserv. 11(4): 3-6, illus. Fall 1967. WR 129: 3
[Dover, Del.] Excerpts from accounts, the earliest of which appeared in 1616.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Rehfus, Ruth, compiler. CALIFORNIA CONDOR (GYMNOGYPS CALIFORNIANUS) / THE LITERATURE SINCE 1900. USDI Dept. Library Bibliog. no. 7A. ii + 16 p. Jan. 1968. WR 129: 3
Arrangement of the items is alphabetical by author. For a survey of the literature before 1900 refer to Harris, H. 1941. [The annals of Gymnogyps to 1900. Condor 43(1): 3-55. Jan./Feb. 1941. (WR 30: 22).]

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Greenlaw, Jon S. FORAGING BEHAVIOR OF THE DOUBLE-TOOTHED KITE IN ASSOCIATION WITH WHITE-FACED MONKEYS. Auk 84(4): 596-597. Oct. 1967. WR 129: 3
[Douglass Coll., New Brunswick, N.J.] Double-toothed kites (Harpagus bidentatus) were observed foraging beneath bands of white-faced monkeys (Cebus capucinus), and were presumably capturing large flying insects flushed by the monkeys.--Courtesy/ Paul A. Stewart.

Anderson, Daniel William. AN EXPLORATION OF PESTICIDES IN CORMORANT AND PELICAN POPULATIONS. M.S. thesis, Univ. Wis. 39 p., 2 figs. 1967. WR 129: 4

There were no significant intraspecific differences between the [pesticide] residues in live and dead eggs of either pelicans or cormorants. The quantities found in the eggs are probably not associated with any readily observable effects on egg survival. Chlorinated hydrocarbons in pelican and cormorant eggs in our samples do not appear to have been ingested on the birds' breeding grounds.--From abstr.

Atkins, T. D., and R. L. Linder. EFFECTS OF DIELDRIN ON REPRODUCTION OF PENNED HEN PHEASANTS. J. Wildl. Mgmt. 31(4): 746-753, 2 figs. Oct. 1967. WR 129: 4

[Arrowwood Natl. Wildl. Refuge, Edmunds, N. Dak.] Abstract: Effects of dieldrin on reproduction of penned hen pheasants (Phasianus colchicus) were measured during 1965 and 1966. Individually caged hens were administered encapsulated dieldrin at weekly intervals. The 1965 treatment levels of 0, 2, or 4 mg per hen per week were administered to birds showing evidence of stress. Of hens surviving, those receiving 4 mg weighed more and laid heavier eggs than the controls. Hatchability of eggs from the 2-mg group was significantly higher for an undetermined reason. Food consumption, egg production, fertility of eggs, and weight gain and survival of chicks were not affected significantly by the treatments. The 1966 treatment levels were 0, 2, 4, or 6 mg per hen per week. The 2- and 4-mg treatments did not appear to influence food consumption and hen weight sufficiently to affect egg production. The 6-mg treatment significantly reduced food consumption, hen weight, and egg production, yet, egg weight, fertility and hatchability of eggs, as well as survival and weight gain of chicks were not reduced significantly. Apparently the 6-mg treatment affected reproduction by lowering the condition of the hens and reducing egg production.

Chura, Nicholas J., and Paul A. Stewart. CARE, FOOD CONSUMPTION, AND BEHAVIOR OF BALD EAGLES USED IN DDT TESTS. Wilson Bull. 79(4): 441-448. Dec. 1967. WR 129: 4

[Natl. Park Serv., Office Natl. Sci. Studies, Washington, D.C.] Summary: Twenty-seven bald eagles captured in southeastern Alaska were used in feeding tests to determine the effects of DDT in the diet. Trapping and housing of eagles are discussed. Various aspects of eagle behavior and handling techniques are also presented. Recommendations are made for preventing injuries and increasing the comfort of captive birds. The 1962 test birds consumed an average of 274 grams per bird day with a range of 109 to 401 grams per day between birds. Average food intake was 254 grams per bird day for the 1963 test birds with a range of 194 to 324 grams per day between birds. Weight losses varied from 23 to 49% of normal body weight for the 7 birds which died in the 1962 tests. Tremors and death occurred first for birds on the highest dosage and progressively later for birds on the lower dosage.--Courtesy/ Paul A. Stewart.

Dindal, Daniel Lee. KINETICS OF Cl^{36} DDT IN WILD WATERFOWL. Ph.D. thesis, Ohio State Univ. 229 p. 1967. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 4

The ingestion rate, metabolism, storage, and excretion of radio-labeled chlorine-36 DDT in wild mallard ducks Anas platyrhynchos and lesser scaup ducks Aythya affinis was investigated for two years. A single application of the tagged pesticide was applied to a marsh at the rate of 0.2 lb/A, a level used for mosquito control. A total of 112 ducks was introduced, exposed to the DDT and collected after various exposure periods. Twenty-three tissues and organs per duck were assayed for DDT residues using liquid scintillation spectrometry, electron capture gas chromatography, thin-layer chromatography and microautoradiography analysis methods. Liquid scintillation spectrometry was the most reliable quantitative analysis method. A total of 3840 samples were processed by all of these methods. Residues of DDT were found at some time in all tissues tested, except the testes of lesser scaup. Lesser scaup

thyroids, spleen, testes, and ovaries contained no detectable residues during the second year. The compounds DDE, DDD, and DDT were most common, but DDE was the predominant metabolite found throughout the two-year period. DDMU was recovered from the liver and brain of both species. Metabolite concentrations are given for all tissues sampled. Definite relationships exist between the quality of food ingested (plant or animal) and the kinetics of DDT residues. This is reflected in the residue level differences between mallards and lesser scaup. Levels in all scaup tissues were generally higher than those of mallard tissues. In both species some of the highest residue concentrations were found in leg and neck fat, uropygial glands, and adrenal glands. Dynamics of equilibrium storage and excretion of DDT residues were also observed.

El Sayed, E. I., J. B. Graves, and F. L. Bonner. CHLORINATED HYDROCARBON INSECTICIDE RESIDUES IN SELECTED INSECTS AND BIRDS FOUND IN ASSOCIATION WITH COTTON FIELDS. J. Agr. & Food Chem. 15(6): 1014-1017. Nov.-Dec. 1967. WR 129: 5

[La. State Univ., Baton Rouge.] All of the eight species [ruby-throated hummingbird, eastern meadowlark, red-winged blackbird, common grackle, house sparrow, tree swallow, barn swallow, and bank swallow] examined showed residues of p,p'-DDT and/or p,p'-DDE with concentrations ranging from 0 to 132.50 p.p.m. and from a trace to 37.50 p.p.m., respectively. In most cases, the fat tissue contained higher levels of residues than the other tissues.--From abstr.

Holmes, D. C., J. H. Simmons, and J. O'G. Tatton. CHLORINATED HYDROCARBONS IN BRITISH WILDLIFE. Nature 216(5112): 227-229, 1 fig. 21 Oct. 1967. WR 129: 5

[Lab. Govt. Chemist, London, England.] Abstract: Polychlorobipheny1 compounds have been detected in British wildlife. In birds' livers and eggs they are often in greater quantities than organochlorine pesticide residues. Polychlorobiphenyls are known to be toxic, and their detection in wildlife raises the question of the adverse effect they may have.

Hooven, E. F. A TEST OF THIRAM ON TWO RABBIT-INFESTED AREAS OF OREGON. Tree Planters' Notes 79: 1-3. Nov. 1966. [From Bibliog. Agr. 31(11), 1967.] WR 129: 5

"Douglas fir."

Jewell, Samuel R. PESTICIDES, DEER AND YOU. Colo. Outdoors 16(6): 26-28, 1 fig. Nov.-Dec. 1967. WR 129: 5

[Colo. Coop. Wildl. Res. Unit, Fort Collins.] "Of the browse and mule deer samples analyzed, none have exceeded concentrations greater than 3.0 parts per million."

Koeman, J. H., R. C. H. M. Oudejans, and E. A. Huisman. DANGER OF CHLORINATED HYDROCARBON INSECTICIDES IN BIRDS' EGGS. Nature 215(5105): 1094-1096, 4 figs. 2 Sept. 1967. WR 129: 5

[Univ. Utrecht, Utrecht, Netherlands.]

Matyushkin, E. N., A. K. Agadzhanyan, G. V. Kuznetsov, and L. V. Kuleshova. [POPULATION OF THE BIRDS AND MAMMALS OF BALSCHOI BALCHAN IN THE CONDITIONS OF WINTER.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(6): 42-51, illus. 1966. [From Biol. Abstr. 48(21), 1967. In Russian.] WR 129: 5

Peakall, D. B. PESTICIDE-INDUCED ENZYME BREAKDOWN OF STEROIDS IN BIRDS. Nature 216(5114): 505-507, 2 figs. 4 Nov. 1967. WR 129: 5

[Upstate Med. Center, New York.] "It has been shown in several mammalian species that a wide variety of organo-chloride pesticides induce increased concentrations of hepatic enzymes which are capable of hydroxylating the natural steroid hormones. Birds were used in this work and the possibility of additive or synergistic effects of DDT and dieldrin was examined.... The experiments demonstrate that relatively small amounts of DDT and dieldrin can induce increased rates of metabolism of steroids by induction of hepatic enzymes."

Risebrough, Robert W., Daniel B. Menzel, D. James Martin, Jr., and Harold S. Olcott. DDT RESIDUES IN PACIFIC SEA BIRDS: A PERSISTENT INSECTICIDE IN MARINE FOOD CHAINS. Nature 216(5115): 589-591. 11 Nov. 1967. WR 129: 6

[Univ. Calif., Berkeley.] "The present study, which is based on analyses of collections of birds, fish and invertebrates from Pacific Ocean localities, indicates that DDT is also a component of marine ecosystems and that pelagic species may accumulate high concentrations of DDT residues."

Schifferli, A. AUSWIRKUNGEN EINER INSEKTIZIDAKTION. [EFFECTS OF SOME INSECTICIDES.] Ornithol. Beob. 63: 25-39. 1966. [From Ibis 109(4), 1967. In German with English summ.] WR 129: 6

Effects of two pesticides on bird-life. In order to control the larch-bud moth (Zeiraphera griseana Hb.) a forest in Valais (Switzerland) was treated with chemicals DDT and phosphamidon. The effects of these pesticides on small passerines are described. The lethal dose of phosphamidon was determined on captive birds. The damaging effects of some other pesticides are discussed.

Schifferli, A. AUSWIRKUNGEN EINER ENDOSULFAN-BEHANDLUNG GEGEN MAIKÄFER AUF DEN VOGELBESTAND DER BETROFFENEN WÄLDER. [EFFECTS OF ENDOSULFANE TREATMENT AGAINST MAY BUGS UPON BIRDLIFE OF LUCERNE CANTON (SWITZERLAND).] Ornithol. Beob. 64: 10-17. 1967. [From Ibis 109(4), 1967. In German.] WR 129: 6

WILDLIFE--PARASITES & DISEASES

Arzamasaw, I. Ts., and G. I. Sapizhuk. [DISTRIBUTION OF SUCTORIA RETZIUS AMONG MAMMALS AND BIRDS IN BYELORUSSIA.] Vyesti Akad. Navuk Byelarus. SSR Syer. Biyal. Navuk 2: 97-102. 1966. [From Biol. Abstr. 48(22), 1967. In Byelorussian with Russian summ.] WR 129: 6

Hardy, James L. ARBOVIRUSES OF WILDLIFE AND THEIR ROLE IN THE EPIDEMIOLOGY OF DISEASE. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 386-396, 2 figs. 1967. WR 129: 6

[Univ. Calif., Berkeley.] Summary: Twenty-one arboviruses are found in North America, of which 20 infect wildlife. Ten of the 21 arboviruses produce a clinical disease in man or domestic animals, or both, but usually produce clinically inapparent infections in wildlife. However, overt disease has been observed in several species of wild birds and mammals infected experimentally or naturally with viruses of eastern equine encephalomyelitis (EEE), western equine encephalomyelitis (WEE), St. Louis encephalitis (SLE), California encephalitis, and epizootic hemorrhagic disease of deer. Our knowledge is incomplete concerning the role of wildlife in the epidemiology of most arboviruses. Colorado tick fever virus is maintained in nature by a tick-to-rodent-to-tick cycle where rodents serve as the basic vertebrate hosts or short-term reservoir hosts of the viruses. Mosquito-borne viruses, such as EEE, WEE, and SLE viruses, are maintained by a mosquito-to-bird-to-mosquito cycle during the summer epidemic seasons, but the long-term reservoir hosts that are essential for the survival of these viruses during interepidemic periods have not been determined.

Ogambo-Ongoma, Appollo H., and Albert G. Canaris. A GUIDE TO HELMINTH SPECIES DESCRIBED FROM AFRICAN VERTEBRATES. W. Va. Univ. Library (Morgantown). iii + 207 p., processed. 1967. WR 129: 6

[W. Va. Univ., Morgantown.] "Information on parasite distribution and frequency of parasite groups described from vertebrate groups. A parasite host list arranged with bibliographic notation and regional location, an alphabetical host list with numerical notation referring to the parasite host list, and a bibliography is given for each of the four helminth groups."

Page, L. A. COMPARISON OF "PATHOTYPES" AMONG CHLAMYDIAL (PSITTACOSIS) STRAINS RECOVERED FROM DISEASED BIRDS AND MAMMALS. Bull. Wildl. Disease Assoc. 3(4): 166-175, 5 figs. Oct. 1967. WR 129: 7

[Natl. Animal Disease Lab., Ames, Iowa.] Abstract: Studies of the pathogenicity for laboratory animals of organisms of the genus Chlamydia (psittacosis-LGV-trachoma group) recovered from diseased birds and mammals were extended to include three strains isolated from cows which had a history of encephalomyelitis or abortion. Each of the strains was titrated or passaged in chicken embryos, mice, guinea pigs, pigeons, turkeys, sparrows, parakeets and sheep. In terms of pathogenicity for these animals, one of the bovine abortion strains was identical to a previously studied pigeon strain in that it produced severe systemic disease indistinguishable from psittacosis in mice, pigeons, sparrows, parakeets and turkeys, while not affecting sheep or guinea pigs. The second abortion strain produced lesions in mice and chicken embryos only. The encephalomyelitis strain caused death and severe lesions in guinea pigs and dwarfing of chicken embryos but otherwise failed to affect the other test species. The "pathotype" determination may reveal significant epizootiologic relationships and may be useful in identifying the source of chlamydiae to domestic animals or in recognizing mutants with new pathogenic capabilities.

Reilly, J. R., and D. A. Boroff. BOTULISM IN A TIDAL ESTUARY IN NEW JERSEY. Bull. Wildl. Disease Assoc. 3(1): 26-29. Jan. 1967. WR 129: 7

[Univ. N. Dak., Grand Forks.] Abstract: Clostridium botulinum, type C was identified as the causative organism in an epornitic which occurred on a tidal estuary in New Jersey. Approximately 1,000 individuals of twelve species representing five families of birds were intoxicated. Muskrats and killifish were also affected. Seven species previously unreported as affected by botulinus intoxication were recorded. The role of the food web in the epizootiology of botulinus intoxication and the intraspecific relationship between the killifish and least terns in the continuance of the outbreak is discussed.

Trainer, Daniel O. THE RELATIONSHIP OF INFECTIOUS DISEASE TO ANIMAL BEHAVIOR. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 374-381. 1967. WR 129: 7

[Univ. Wis., Madison.] Summary: To elucidate the close relationship and significance of infectious disease to animal behavior, a series of behavior patterns studied by ethologists were compiled and infectious diseases that could alter and/or effect the respective patterns recorded. Thirty-nine different infections (viral, bacterial, parasitological) were reported. Select behavior patterns and specific diseases were discussed in detail to further illustrate the relationship of disease to behavior. The paper illustrates and documents the fact that infectious disease does affect the behavior of both wild and domestic animals and disease, especially chronic in nature, is an ecological factor that could and should be considered by the ethologist in his researches.

WILDLIFE--POPULATIONS & FLUCTUATIONS

Foster, J. B., and D. Kearney. NAIROBI NATIONAL PARK GAME CENSUS, 1966. East African Wildl. J. 5: 112-120, 2 figs. Aug. 1967. WR 129: 7

[Univ. Coll., P.O. Box 30197, Nairobi, Kenya.] Counts for zebra, Grant's gazelle, Thomson's gazelle, impala, waterbuck, bushbuck, eland, kongoni, wildebeest, warthog, giraffe, and ostrich for 1961-1966.

WILDLIFE--BIOMETRICS

MacDonald, Duncan, and Everett G. Dillman. TECHNIQUES FOR ESTIMATING NON-STATISTICAL BIAS IN BIG GAME HARVEST SURVEYS. J. Wildl. Mgmt. 32(1): 119-129, 1 fig. Jan. 1968. WR 129: 8

[N. Mex. Dept. Game & Fish, Santa Fe.] Abstract: Two sources of bias in mail questionnaire surveys to determine game harvests are response bias and non-response bias. Response bias was tested in a 3-year survey of deer hunters whose performance was known. In the survey years, net error in estimating total deer harvest was 7.6%, with 9.1% of unsuccessful hunters reporting a kill and 4.5% of the successful hunters reporting no kill. Non-response bias was tested using intensive follow-up mailings and personal contact in a single year. A significant non-response bias toward overestimation was demonstrated in one of four hunting license types (Resident Big Game) and a correction factor of 8.0% was suggested for this license type. Results of both surveys suggest that the mail questionnaire method of estimating deer harvest provides reasonable estimates of total harvest.

Schwarzenbach, F. H. VERTEILUNGSFREIE PRÜFVERFAHREN. [DISTRIBUTION-FREE STATISTICS.] Ornithol. Beob. 63: 40-47. 1966. [From Ibis 109(4), 1967. In German.] WR 129: 8

Biometric analysis of Leuzinger's (1964) results on international counts of waterfowl in Switzerland 1960/61 and 1962/63. Applies significance tests to determine whether the monthly counts within one winter are homogeneous. Finding that they are not, determines correlation coefficient for seasonal variations in successive winters. Tests whether total counts of one winter differ significantly from other winters by comparing random samples.

WILDLIFE--TECHNIQUES

Demmer, H. BEOBACHTUNGEN ÜBER DAS VERHALTEN VERSCHIEDENER WILD-LEBENDER TIERE BEIM FANG IN FREIER WILD BAHN IN AFRIKA. [OBSERVATIONS ON THE BEHAVIOR OF VARIOUS WILD ANIMALS DURING THEIR CAPTURE IN AFRICA.] Zool. Gart. 32(5): 210-215. 1966. [From Biol. Abstr. 48(23), 1967. In German.] WR 129: 8

[P.O. Box 3383, Nairobi, Kenya.] Methods for capture of African elephants, rhinos, giraffes, zebras, leopards, ostriches, antelopes, and other species are described.

Smirnov, P. K. [TAUTOCHRONES AS A GRAPHIC METHOD TO CHARACTERIZE THE THERMAL CONDITIONS OF HABITATS OF ANIMALS.] Vestnik Leningrad Univ. Ser. Biol. 21(3): 33-47. 1966. [From Biol. Abstr. 48(23), 1967. In Russian with English summ.] WR 129: 8

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Canadian Wildlife Service. TRANSACTIONS OF THE THIRTY-FIRST FEDERAL-PROVINCIAL WILDLIFE CONFERENCE HELD IN OTTAWA, ONTARIO, JULY 11 TO 13, 1967. 97 p. 1967. WR 129: 8

The following papers were presented: Report to the Federal-Provincial Wildlife Conference, 1967, R. Passmore; The role of the Royal Canadian Mounted Police in Canada's national wildlife policy and program, A. Huget; Aspects of law enforcement in Canada--Migratory Birds Convention Act, W. R. Miller; Considerations in budgeting for fish and wildlife management, J. Hatter; A place to hunt, C. H. D. Clarke; Improper use of snow vehicles for hunting, G. W. Malaher; Humane trapping, N. S. Novakowski; Additions to the list of birds protected under Migratory Birds Treaty and Migratory Birds Convention Act, F. G. Cooch; Conservation of rare and endangered species of mammals in Canada, N. S. Novakowski; The status of the cougar in the northeast, Bruce S. Wright.

Davey, Stuart P. THE ROLE OF WILDLIFE IN AN URBAN ENVIRONMENT. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 50-60. 1967. WR 129: 9
[USDI, Washington, D.C.] The function and role of wildlife resources in our contemporary society is changing. Desirable wildlife species can greatly improve the quality of our urban environment--especially at home and during our leisure. The wildlife professionals should understand and meet these changes. More people with more leisure are indicating more desire for wildlife within their recreational experience, even though urbanization increases. State and federal agencies responsible for wildlife resources can systematically direct the enhancement of desirable wildlife species within urban areas through existing wildlife programs and improved coordination with city and recreational planners, architects, and developers. Also, city officials and planners could request assistance from public and private wildlife groups to meet public interest.--From summ.

Dietz, Reuben H. RESULTS OF INCREASING WATERFOWL HABITAT AND PRODUCTION BY GULL CONTROL. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 316-325, 2 figs. 1967. WR 129: 9
[Utah State Dept. Fish & Game, Farmington.] Recommendations: When nesting populations of gulls reduced the productivity of waterfowl habitat, these populations should be removed from the area. Shooting adult gulls is the most effective and feasible means of accomplishing this task on inaccessible nesting areas. On more readily accessible breeding grounds discarded Christmas trees or other suitable ground cover has proven to be effective in discouraging gull nesting on island habitat. These two methods lend themselves to the management of gulls on waterfowl production areas and should be employed until more suitable means are discovered.

Enyeart, George W. GARRISON RESERVOIR GAME MANAGEMENT AREAS. Proc. N. Dak. Acad. Sci. 19: 116-120. 1965. [From Biol. Abstr. 48(24), 1967.] WR 129: 9
[N. Dak. Game & Fish Dept., Bismarck.]

Foster, Charles H. W. THE PRIVATE ROLE IN PUBLIC LAND ACQUISITION. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 74-80. 1967. WR 129: 9
[Nature Conservancy, Washington, D.C.]

Hoffmann, Robert S. THE INTERNATIONAL BIOLOGICAL PROGRAM AND THE UNIVERSITY BIOLOGIST. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 286-291. 1967. WR 129: 9
[Univ. Mont., Missoula.]

Morgan, Lyle. WILDLIFE MANAGEMENT THROUGH PEACH PRODUCTION. Wildl. in N.C. 31(9): 22-23, illus. Sept. 1967. WR 129: 9
[Sandhills Wildl. Mgmt. Area, Hoffman, N.C.] A program of leasing scrub oak and wire grass land for orchards. Cultivation, cover crops and other management measures outlined would benefit doves, deer, turkey, quail, and pine plantations.

Sprugel, George, Jr. REACTION OF GOVERNMENT WILDLIFE SPECIALISTS TO THE INTERNATIONAL BIOLOGICAL PROGRAM. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 280-286. 1967. WR 129: 9
[Ill. Nat. Hist. Surv., Urbana.] In this survey only 17 of 63 knew of the existence of IBP and only 8 of 59 had a detailed knowledge of the IBP plans.

Stearns, Forest W. WILDLIFE HABITAT IN URBAN AND SUBURBAN ENVIRONMENTS. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 61-69. 1967. WR 129: 9
[North Central Forest Expt. Sta., Rhinelander, Wis.]

Strange, James D. LAND USE PLANNING AND ZONING IN CONSERVATION. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 80-88. 1967. WR 129: 9
[U.S. Forest Serv., Atlanta, Ga.]

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL--Continued

Towell, William E. DO RESIDENTS CONTROL RESIDENT GAME? Am. Forests 73(7): 20-21, 40-41, illus. July 1967. WR 129: 10
A discussion of the question: Who shall regulate the harvest of fish and resident game on federal lands--the federal government or the states?

Twiss, Robert H. WILDLIFE IN THE METROPOLITAN LANDSCAPE. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 69-74. 1967. WR 129: 10
[Univ. Calif., Berkeley.]

U.S. National Committee for International Biological Program. RESEARCH STUDIES CONSTITUTING THE U. S. CONTRIBUTION TO THE INTERNATIONAL BIOLOGICAL PROGRAM. Natl. Res. Council U.S. Natl. Com. Intern. Biol. Program Rept. no. 3, Part 1. iii + 27 p. June 1967. WR 129: 10
The first installment of a report which when completed, will describe the research programs and projects that will make up the U.S. component of the International Biological Program. The installment contains short statements about five integrated research programs, each of which will involve coordinated research by many scientists from several disciplines, and brief descriptions of some 100 individual research projects that were approved and funded by agencies of the Federal government before the end of May 1967.

WILDLIFE--HUNTING AREAS & PROBLEMS

Malaher, G. W. IMPROPER USE OF SNOW VEHICLES FOR HUNTING. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 429-433. 1967. WR 129: 10
[Wildl. Branch, Province of Manitoba, Winnipeg, Canada.]

Swanson, Gustav A., and Eugene C. Waldbauer. PUBLIC HUNTING OPPORTUNITIES IN THE STATE OF NEW YORK. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 89-95. 1967. WR 129: 10
[Colo. State Univ., Fort Collins.]

WILDLIFE--FOOD HABITS & TECHNIQUES

Lamprey, H. F. NOTES ON THE DISPERSAL AND GERMINATION OF SOME TREE SEEDS THROUGH THE AGENCY OF MAMMALS AND BIRDS. East African Wildl. J. 5: 179-180. Aug. 1967. WR 129: 10
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.]

Weir, Douglas N. A POSSIBLE SOURCE OF ERROR IN RAPTOR FOOD ANALYSIS. Bird Study 14(3): 194. Sept. 1967. WR 129: 10
"Fox droppings can be distinguished from bird pellets, but raven pellets might be mistaken for those of the gyrfalcon or snowy owl and other such errors are possible. Scavengers eating from partly consumed large kills could distort studies of food consumed by such birds as nesting golden eagles. If scavengers ate or removed remains of one prey species more readily than others, studies of raptor food spectra based on kill remains would also be affected."

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Dietz, Donald R., and James R. Tigner. EVALUATION OF TWO MAMMAL REPELLENTS APPLIED TO BROWSE SPECIES IN THE BLACK HILLS. J. Wildl. Mgmt. 32(1): 109-114. Jan. 1968. WR 129: 10
[Rocky Mountain Forest & Range Expt. Sta., Rapid City, S. Dak.] Abstract: Two mammal repellents, ZAC (zinc dimethyldithiocarbamate cyclohexylamine complex) and TMTD (tetramethylthiuram disulfide) were applied to selected browse species in the Black Hills of South Dakota. Protection was tested by measuring current annual twigs removed during the period of winter use by

white-tailed deer (Odocoileus virginianus) and mule deer (O. hemionus). The repellents effectively protected chokecherry (Prunus virginiana), American plum (Prunus americana), aspen (Populus tremuloides), and caragana (Caragana arborescens) from deer browsing. Use by deer on untreated native chokecherry plants varied from 21.8 to 43.9 with a mean of 28.9%; use of TMTD-treated plants varied from 2.1 to 17.4 with a mean of 6.8%, and use of ZAC-treated plants varied from 0.3 to 1.8 with a mean use of 0.7%. Both repellents protected aspen shoots almost as effectively as caging. ZAC was also applied to caragana and plum nursery transplants, and significantly prevented browsing by deer. Mammal repellents provide an alternative to expensive and laborious fencing and caging of experimental plants and plots, and also may be useful in browse revegetation projects.

Penney, R. L., and George Lowry. LEOPARD SEAL PREDATION ON ADELIE PENGUINS. Ecology 48(5): 878-882. Late Summer 1967. WR 129: 11
[N.Y. Zool. Soc., New York, N.Y.] Active predation, involving up to four seals, was observed during 56% of the time with average kill rates of 0.61 birds/hr.--From abstr. Courtesy/ Paul A. Stewart.

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Smith, William M. HUNTER SUCCESS / AN ESTIMATE OF THE WILDLIFE HARVEST IN NEW JERSEY DURING 1966-1967. N.J. Outdoors 18(5): 6-12. Nov. 1967. WR 129: 11
Analysis of the harvest of rabbit, squirrel, pheasant, quail, grouse, duck, brant, and clapper rail.

WETLANDS & WILDLIFE

Bodovitz, Joseph E., and others. PROBLEMS OF MAINTAINING BAYS AND ESTUARIES--A PANEL. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 120-237. 1967. WR 129: 11
The following papers are included: San Francisco Bay, Joseph E. Bodovitz; Seattle's efforts in restoration of bays and estuaries, Gary W. Isaac and Curtis P. Leiser; The condition of the Chesapeake Bay, L. Eugene Cronin; The role of research in the presence of estuaries, James E. Sykes; Problems of conservation in the Atlantic estuarine zone, Lionel Walford; A modern approach to the study of estuaries, with specific reference to the Duwamish River, Washington, Denny M. Miller, Jerry A. Wetherall, and William H. Lenarz.

DeBates, Lawrence W. THE ROLE OF SMALL WETLAND PRESERVATION IN COMPREHENSIVE PRAIRIE POTHOLE REGION PLANNING. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 325-331. 1967. WR 129: 11
[Bur. Sport Fisheries & Wildl., Fergus Falls, Minn.]

Ferianc, Oskar. VPLYV NOVEJ VODNEJ RETENCNEJ NADRZE POD VIHOLATOM NA TRANSMIGRUJUCE VODNE VTACTVO VYCHODNYM SLOVENSKOM. [EFFECT OF THE NEW RETAINING-BASIN NEAR THE MOUNTAIN VIHORLAT ON THE WATER BIRDS TRANSMIGRATING THROUGH EAST SLOVAKIA.] Biologia (Bratislava) 22(1): 45-57, illus. 1967. [From Biol. Abstr. 48(24), 1967. In Czech with German and Russian summ.] WR 129: 11
[Univ. Komenskeho, Bratislava, Czechoslovakia.]

Florschutz, Otto, Jr. MULTIPLE USE OF SALT MARSH IMPOUNDMENTS. Wildl. in N.C. 31(11): 12-14, 3 figs. Nov. 1967. WR 129: 11
"While the costs of impounding are approximately one-third higher than ditching, the benefits are many times greater. The results of ditching are primarily for salt marsh mosquito control." The benefits of impoundment include: mosquito control, waterfowl use, waterfowl hunting, other wildlife use, furbearer trapping, fishing, crabbing, frogging, and firebreaks.

Leedy, Daniel L. NEW OPPORTUNITIES FOR RESEARCH AND TRAINING IN WATER-RELATED AREAS. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 332-339. 1967. WR 129: 12
[Office Water Resources Res., USDI, Washington, D.C.]

Reed, Porter Buchwald, Jr. PRELIMINARY STUDY OF A GREEN-TIMBER IMPOUNDMENT. M.S. thesis, Cornell Univ. viii + 66 p. Jan. 1968. WR 129: 12
Abstract: The effects upon vegetation and waterfowl in the first year of flooding of a 300-acre green-timber impoundment on the Montezuma National Wildlife Refuge in central New York State were studied. The pool was flooded in late March and drained in early July, 1965. No mortality was observed in trees during the first year following flooding. The growth of swamp white oak (Quercus bicolor) appeared to be stimulated by the flooding regime. Some mortality in shrubs was noted and the standing crop of herbaceous vegetation was considerably reduced. Migrants used the impounded pool in early spring. Large numbers of waterfowl used the pool as a day-rest area in June. Waterfowl nesting was studied by searching randomly-drawn transects. A density of 0.30 ± 0.02 (P = 0.05) nests per acre was estimated for the flooded pool. Thirty-one percent of the 62 nests discovered in the impoundment were successful. Thirty waterfowl broods used the impoundment until it was drained. A bait-trapping and color-marking program resulted in banding 256 waterfowl in June and July.

FARMLAND & WILDLIFE

Baker, Clark Post. SOME EFFECTS OF FIRE ON OLD-FIELD PLANT COMMUNITIES OF SOUTH-CENTRAL NEW YORK. M.S. thesis, Cornell Univ. viii + 95 p., 7 figs. Jan. 1968. WR 129: 12
Published by the N.Y. Cooperative Wildlife Research Unit, Cornell University, Ithaca. Most of the woody species responded to burning by sprouting with the exception of white pine.

Boyce, Arlow P. RESULTS OF THE CROPLAND ADJUSTMENT PROGRAM'S FIRST YEAR IN MICHIGAN. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 96-102, 2 figs. 1967. WR 129: 12
[Mich. Dept. Conserv., Lansing.]

RANGELAND & WILDLIFE

Klemmedson, James O. BIG-GAME WINTER RANGE--A DIMINISHING RESOURCE. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 259-269. 1967. WR 129: 12
[Univ. Ariz., Tucson.] "It is my purpose in this paper to delineate and illustrate the impact of some of the more important factors causing decline in winter range. I have categorized the factors into two groups: 1) those which exert an influence yet are more or less within the control of resource managers and 2) those over which the game or land manager has little if any control--but whose effect is just as devastating."

Pratt, D. J. A NOTE ON THE OVERGRAZING OF BURNED GRASSLAND BY WILDLIFE. East African Wildl. J. 5: 173-174. Aug. 1967. WR 129: 12
[Range Mgmt. Division, P.O. Box 30028, Nairobi, Kenya.]

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Almasan, H. [ON INJURIES TO THE CULTURES OF POPULUS EUROAMERICANA BY THE COMMON DEER (CERVUS ELAPHUS L.).] Rev. Padurilor 81(9): 509-510. Sept. 1966. [From Bibliog. Agr. 31(9), 1967. In Romanian.] WR 129: 12

Eiberle, K. [THE EFFECTS OF BROWSE ON YOUNG GROWTH IN PLANETREE MAPLE AND ASH.] Schweiz. Z. Forstwesen 118(5): 321-326. May 1967. [From Bibliog. Agr. 31(11), 1967. In German with French summ.] WR 129: 13

Ernst, K. [STUDIES ON THE DISTRIBUTION OF BARK DAMAGES CAUSED BY RED DEER IN PINE THICKETS OF THE ROTHEMUHL GAME RESEARCH DISTRICT AND THE INFERENCES FOR BIOLOGICAL PREVENTION OF GAME-CAUSED INJURIES.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 39-46. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 13

Halls, L. K., and R. Alcaniz. BROWSE PLANTS YIELD BEST IN FOREST OPENINGS. J. Wildl. Mgmt. 32(1): 185-186. Jan. 1968. WR 129: 13
[Southern Forest Expt. Sta., Nacogdoches, Texas.] Abstract: At age 5 years, open-grown plants of seven browse species averaged 32 times more fruit and nearly 7 times more twig growth than plants beneath a sawtimber-size stand of southern pines.

Harder, John D. METHODS OF EVALUATING WINTER DEER USE OF ORCHARDS IN WESTERN COLORADO. Colo. Coop. Wildl. Res. Unit Tech. Pap. 4. 7 p. 15 Aug. 1966. WR 129: 13
Methods discussed include: browse measurement, inspection for antler rubbing, track counts, photoelectric-cell deer counting stations, and night observation of deer.

Koller, O. [SCIENCE OF HUNTING AND RESEARCH ON THE DAMAGE CAUSED BY GAME.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 15-25. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 13

Langhammer, A. ARE WE ABLE TO PREVENT RODENT DAMAGE. Norsk Landbruk 5: 10-13. 10 Mar. 1967. [From Bibliog. Agr. 31(10), 1967. In Norwegian.] WR 129: 13
"Forest pest control."

Larson, Joseph Stanley. WILDLIFE FORAGE CLEARINGS ON FOREST LANDS--A CRITICAL APPRAISAL AND RESEARCH NEEDS. Ph.D. thesis, Va. Polytech. Inst. 146 p. 1966. [From Dissertation Abstr. 27(7B), 1967.] WR 129: 13
This is a critical review of the practice of creating and maintaining agricultural clearings in forests of the United States for forest-wildlife habitat improvement. It traces the history of this practice (1935-1965), presents an inventory of its extent, critically reviews the bases for the practice, and makes specific research and management recommendations based on the review. Published, processed and unpublished reports, correspondence and personal interviews with responsible officials, and personal inspections of clearing installations in the various states provided the data for the study.

Larson, Joseph S. FORESTS, WILDLIFE, AND HABITAT MANAGEMENT--A CRITICAL EXAMINATION OF PRACTICE AND NEED. SE Forest Expt. Sta., U.S. Forest Serv. Res. Pap. SE-30. 28 p., illus. Dec. 1967. WR 129: 13
[Mass. Coop. Wildl. Res. Unit, Amherst.] Abstract: This paper reports on the nature and extent of forage clearing practices for game management in the Eastern United States, critically evaluates present knowledge of this practice, and presents a possible program for effective research.

Lay, Daniel W. BROWSE PALATABILITY AND THE EFFECTS OF PRESCRIBED BURNING IN SOUTHERN PINE FORESTS. J. Forestry 65(11): 826-828. Nov. 1967. WR 129: 13
[Texas Parks & Wildl. Dept., Nacogdoches.] Abstract: Four deer in a 58-acre pen responded to a 25-acre burn with double the degree of utilization on the burned as on the unburned part for the first and second years. This was the first burn under a full stand of pine and the understory was 15 to 25 feet high. Production of browse as well as its palatability was increased by the fire. The dangers of too-frequent burning are outlined.

Lochman, J. [A NEW FEEDING TECHNIQUE FOR CLOVEN-HOOFED GAME IN RELATION TO DAMAGES IN THE FOREST; THE PROBLEM OF GAME-CAUSED DAMAGES FROM THE VIEWPOINT OF THE NUTRITIONAL PHYSIOLOGY OF CLOVEN-HOOFED GAME.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 27-30. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 14
"Red and roe deer."

Neumann, A. [SEASONAL INTENSITY OF BARK STRIPPING BY RED DEER IN A PINE (PINUS SYLVESTRIS) DISTRICT.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 31-38. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 14

Schuster, Joseph L. THE RELATION OF UNDERSTORY VEGETATION TO CUTTING TREATMENTS AND HABITAT FACTORS IN AN EAST TEXAS PINE-HARDWOOD TYPE. Southwestern Nat. 12(4): 339-364. 31 Dec. 1967. WR 129: 14
[Texas Technol. Coll., Lubbock.] Abstract: The composition, frequency of occurrence and production of understory vegetation under various stands of a loblolly-shortleaf pine-hardwood forest is described. Variations in timber stand brought about differences in species composition and frequency of occurrence, with woody and forb species being favored under denser timber stands and grasses favored in stands opened by cutting. Forage production of all forage classes increased in proportion to reduction of timber stand factors. Soil and topographic factors influenced production, but were apparently overshadowed by timber stand factors.

Shaw, Samuel P. WOODLOTS, WILDLIFE, AND TIMBER MANAGEMENT. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 238-246, 2 figs. 1967. WR 129: 14
[U.S. Forest Serv., Upper Darby, Pa.] Summary: With the many programs of professional and financial assistance ready and waiting for woodlot owners, there should be plenty of incentive for getting the job done. As hunters increase and available hunting grounds decrease in the years ahead, the woodlots of this country are becoming the "last frontier" for meeting the recreational demands of hunters. We have an obligation to make them serve both forestry and wildlife needs, as well as other resource values that can be properly brought into woodlot management on private lands. My final plea is for game biologists to join forces with foresters, use all the professional and financial tools available to them--and push the cooperative forest management program. Always remember, it is mandatory to cut trees in order to maintain a continuously productive habitat for forest game. Industry can use those trees.

Stahl, D. [CHEMICAL PROTECTION AGAINST DAMAGES CAUSED BY RUBBING.] Allg. Forstz. 21(34): 588. 10 Aug. 1966. [From Bibliog. Agr. 31(11), 1967. In German.] WR 129: 14
"Wildlife control."

Wagenknecht, E. [EFFECTS OF BARK DAMAGES TO PINE ON THE INDIVIDUAL STEM AND ON THE STAND AS WELL AS THE CONCLUSIONS FOR FORESTRY PRACTICE.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 47-59. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 14

Wegge, P. [INJURIES FROM SMALL RODENT IN FORESTRY.] Norsk Skogbruk 5(13): 155-156. Mar. 1967. [From Bibliog. Agr. 31(10), 1967. In Norwegian.] WR 129: 14

Ziegler, F. [FOREST PROTECTION AGAINST HIGHER MAMMALS.] Schweiz. Z. Forstwesen 118(2): 84-88. Feb. 1967. [From Bibliog. Agr. 32(1), 1968. In German.] WR 129: 14

MAMMALS--GENERAL

Sachs, R. LIVEWEIGHTS AND BODY MEASUREMENTS OF SERENGETI GAME ANIMALS. East African Wildl. J. 5: 24-36. Aug. 1967. WR 129: 15
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.] Summary: More than 300 game animals shot in the Grumeti Controlled Area, Tanzania, during research into game utilisation were weighed and measured. The results are presented and compared with other available data. Considerable variation is apparent between animals of the same species from different areas. The techniques of linear measurement are fully described in an attempt to standardise measurements for comparative purposes.

Studier, Eugene H., Lee R. Beck, and Robert G. Lindeborg. TOLERANCE AND INITIAL METABOLIC RESPONSE TO AMMONIA INTOXICATION IN SELECTED BATS AND RODENTS. J. Mammal. 48(4): 564-572, 4 figs. Nov. 1967. WR 129: 15
[N. Mex. Highlands Univ., Las Vegas.] "Tadarida brasiliensis, Myotis lucifugus, Eptesicus fuscus, Rattus, and Mus."

MAMMALS--TECHNIQUES

Brüggemann, J., D. Giesecke, and Karin Walser-Kärst. METHODS FOR STUDYING MICROBIAL DIGESTION IN RUMINANTS POST MORTEM WITH SPECIAL REFERENCE TO WILD SPECIES. J. Wildl. Mgmt. 32(1): 198-207. Jan. 1968. WR 129: 15
[Inst. Tierphysiol. Univ. München, Munich, Germany.] Abstract: In view of the recent interest in studying the nutrition of wild ruminants in their natural habitats, methods are discussed which by application to killed animals in the field can provide information on food selection and digestive processes. The main criteria considered useful for such investigations include (1) the weight of digesta in the ruminoreticulum, (2) botanical and chemical analyses of main digesta constituents, (3) the molar proportions of rumen volatile fatty acids, (4) fermentation rates of added and/or ingested substrates and (5) total and differential counts of rumen microorganisms.

Brusman, Herbert H., Samuel B. Linhart, Donald S. Balser, and Lewis W. Sparks. A TECHNIQUE FOR PRODUCING ANTIFERTILITY TALLOW BAITS FOR PREDATORY MAMMALS. J. Wildl. Mgmt. 32(1): 183-184, 2 figs. Jan. 1968. WR 129: 15
[Bur. Sport Fisheries & Wildl., Federal Center, Denver, Colo.] Abstract: A stainless steel tank with a multiple-orifice spigot and a 200-cavity silicone rubber mold were constructed for making 15,000 antifertility tallow drop baits per day for field research in regulating coyote (Canis latrans) numbers in the Southwest.

Eberhardt, L. L. A PRELIMINARY APPRAISAL OF LINE TRANSECTS. J. Wildl. Mgmt. 32(1): 82-88, 2 figs. Jan. 1968. WR 129: 15
[Battelle Memorial Inst., Richland, Wash.] Abstract: The need for improved methods of measuring abundance of wild animals leads to some suggestions for research on line transects. In particular, extensive field data are needed on the frequency of sightings classified by distance from the observer's path. A classification of processes underlying transect observations shows the need for models tailored to fit each kind of application, owing to the importance of distinguishing between those effects which depend on the observer's behavior and those which primarily depend on an animal's reaction to the observer's presence. Some approaches for further analysis and field study are outlined.

Friend, Milton. RELATIONSHIP BETWEEN EYE-LENS WEIGHT AND VARIATIONS IN DIET. N.Y. Fish & Game J. 14(2): 122-151, 7 figs. July 1967. WR 129: 15
[N.Y. State Conserv. Dept., Albany.] Abstract: No significant differences were found among eye-lens weights from Wistar-strain laboratory rats maintained from weaning (21 days) until 10 weeks of age on diets of different nutritional levels. Test groups included rats fed three-quarter and one-half rations and others fed rations reduced in protein energy, Vitamin A content or combinations of them. Rats fed a standard diet were used for comparison. Body weight

responses to the treatment diets were most pronounced in male rats. Final body weights of male rats fed diets reduced in protein, energy or both were significantly lower than those of the controls; for females, only those fed diets reduced in energy showed similar responses. No significant weight differences occurred between the control groups and rats fed the Vitamin A-free diet. Statistical analysis showed no correlation between eye lens weight and body weight for rats of similar age and sex.

Friend, Milton. A REVIEW OF RESEARCH CONCERNING EYE-LENS WEIGHT AS A CRITERION OF AGE IN ANIMALS. N.Y. Fish & Game J. 14(2): 152-165. July 1967. WR 129: 16

[N.Y. State Conserv. Dept., Albany.] Abstract: A review of the pertinent literature concerning growth of the eye lens is presented together with a discussion of variables inherent in evaluating lens-weight data as a criterion of age in wildlife species. The findings of 33 other studies are summarized. The importance and application of the technique in wildlife biology is also discussed.

Friend, Milton. SOME OBSERVATIONS REGARDING EYE-LENS WEIGHT AS A CRITERION OF AGE IN ANIMALS. N.Y. Fish & Game J. 14(2): 91-121, 15 figs. July 1967. WR 129: 16

[N.Y. State Conserv. Dept., Albany.] Abstract: Studies of specimens from white rats demonstrated that eye-lens weight increases as an animal grows older. Curves for both wet and dry weight, and for fresh as well as formalin-fixed specimens, gave equally usable indices. Measurements of specific gravity also reflected age differences. Fixing the eye in formalin, followed by lens removal, ovendrying and weighing, was found to be the best method. The length of time in formalin must be considered when evaluating data obtained in this way. Tests with white rats and guinea pigs indicated that, under field conditions, quick freezing may be used to preserve lenses until they can be placed in formalin or processed further. The procedure for removing the eye and processing the lens is described.

Goddard, John. THE VALIDITY OF CENSUSING BLACK RHINOCEROS POPULATIONS FROM THE AIR. East African Wildl. J. 5: 18-23. Aug. 1967. WR 129: 16

[Ngorongoro Conserv. Area, P.O. Box 6000, Ngorongoro Crater, Tanzania.] Summary: The efficacy of censusing black rhinoceros (Diceros bicornis Linnaeus) populations from the air was tested. Repeated aerial counts were made of the black rhinoceros population centered on Olduvai Gorge, Tanzania, where the number of rhinoceros on the ground is known accurately. Even under the most ideal conditions only 50% of the population was detected by observers in an aircraft, and factors accounting for this are considered. It is concluded that the light aircraft is of limited value in providing estimates of black rhinoceros populations, and estimates based purely on aerial counts are subject to considerable variation.

Graham, W. J., and H. W. Ambrose III. A TECHNIQUE FOR CONTINUOUSLY LOCATING SMALL MAMMALS IN FIELD ENCLOSURES. J. Mammal. 48(4): 639-642, 3 figs. Nov. 1967. WR 129: 16

[Univ. Mich., Ann Arbor.] "The present paper describes an automated recording device for periodically locating a radioactively-tagged vole in an enclosure. The device consists of three functional parts concerned with 1) isotope detection, 2) rotation, and 3) recording. The detection portion consists of a scintillation probe mounted on an aluminum boom and connected to a log-scale ratemeter. The rotation of this boom is powered by a large synchronous motor mounted in a stationary base. The continuous signals from the ratemeter are fed into a recorder along with a pulse which indicates when the boom points north."

Ramsey, Charles W. A DROP-NET DEER TRAP. J. Wildl. Mgmt. 32(1): 187-190, 2 figs. Jan. 1968. WR 129: 17
[Texas Parks & Wildl. Dept., Hunt.] Abstract: A drop-net, 70 X 70 ft, made of No. 60 nylon with 3.5-inch mesh, was developed to capture deer in areas of high deer density. An explosive trigger device was employed, fired by push-button or by radio control. In a 9-month period, about 340 animals were captured, mostly white-tailed deer (Odocoileus virginianus) and axis deer (Axis axis). The average catch was 10 and the maximum was 23. The drop-net trap is highly portable, can be erected quickly, and permits individual animals to be selected for capture.

MAMMALS--FAUNAS & MANUALS

Aleksandrov, V. N. [MAMMALS OF THE CAUCASUS RESERVE.] Trudy Kavkazkogo Gos. Zapovednika 8: 174-176. 1965. [From Biol. Abstr. 48(22), 1967, from Referat. Zhur., Biol., 1966, no. 3I489. Transl. of Russian abstr.] WR 129: 17

Finney, Barbara Ann. SMALL MAMMAL POPULATIONS IN THE CAPITAN MOUNTAINS, NEW MEXICO. Ph.D. thesis, Univ. Colo. 213 p. 1966. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 17

Kirkpatrick, T. H. MAMMALS, BIRDS AND REPTILES OF THE WARWICK DISTRICT, QUEENSLAND. 1. INTRODUCTION AND MAMMALS. Queensland J. Agr. & Animal Sci. 23: 591-598, 3 figs. 1966. WR 129: 17
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] Summary: A survey of mammals of the Warwick district made during 1964-65 is described. Fifty-four species are recorded, including 2 Monotremata, 26 Marsupialia and 26 Eutheria, eight of the last introduced. Marsupials include 11 macropods and 4 dasyurids; Eutheria include 13 species of Chiroptera. Habitat types, and estimates of abundance ranging from scarce to abundant, are given.

Pattie, Donald L., and Nicolaas A. M. Verbeek. ALPINE MAMMALS OF THE BEARTOOTH MOUNTAINS. Northwest Sci. 41(3): 110-117, 2 figs. 1967. WR 129: 17
[Pacific Lutheran Univ., Tacoma, Wash.]

Whitaker, John O., Jr. MAMMALS OF VIGO COUNTY, INDIANA. Proc. Ind. Acad. Sci. 75: 280. 1965. [From Biol. Abstr. 48(22), 1967.] WR 129: 17
Abstract only.

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Adams, Lowell, and Stanley D. Davis. THE INTERNAL ANATOMY OF HOME RANGE. J. Mammal. 48(4): 529-536, 4 figs. Nov. 1967. WR 129: 17
[Univ. Calif. Med. Center, San Francisco.] Abstract: Direct observations and radio tracking provide a great many more observations of animal location than does live trapping. This greater wealth of data allows quantitative descriptions of the distribution of use-intensity within the home range, in addition to the usual outline of the home range. This entails the use of biometrical methods adapted to the management of the more massive data. Variation in use-intensity over the home range can be represented graphically as a 3-dimensional frequency surface. The "Index of Overlap," described here, provides a succinct measure of the coincidence of use-intensity over the home ranges of two individuals.

Caughley, Graeme. PARAMETERS FOR SEASONALLY BREEDING POPULATIONS. Ecology 48(5): 834-839, 1 fig. Late Summer 1967. WR 129: 17
[New Zealand Forest Serv., Rangiora.] Abstract: Lotka's equations relating the parameters of populations with no seasonal trend in birth rates and Fisher's formula for "reproductive value" are modified to describe populations with

restricted annual seasons of birth. The parameters "net reproductive rate" and "mean generation length" provide statistics of dubious utility for populations with overlapping generations. New definitions of birth rate and death rate are proposed whereby the relationships between the crude, finite and exponential rates are simplified. The use of these parameters is illustrated by statistics calculated for a population of sheep.--Courtesy/ Paul A. Stewart.

Meierotto, Richard Robert. THE DISTRIBUTION OF SMALL MAMMALS ACROSS A PRAIRIE-FOREST ECOTONE. Ph.D. thesis, Univ. Minn. 88 p. 1967. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 18

The study was conducted in an attempt to determine the effect of environmental differences on small mammal populations occurring across a prairie-forest transition zone in northwestern Minnesota. Five sites representing forest habitat were selected across the ecotone. These were maple-basswood stands of as homogeneous a nature as could be found within the framework of proper spacing of stands across the transect. Another series of five stands representing grassland habitat consisted of native prairie where available with the substitution of abandoned or soil-bank fields where necessary. The two vegetation types served as the basis for analyzing small mammal distribution and abundance. Grassland and forest populations of mice were essentially different. A total of 414 Microtus pennsylvanicus was found in grassland and only one in the forest. Peromyscus maniculatus gracilis, Peromyscus leucopus, and Clethrionomys gapperi were woodland species, with the exception of two Peromyscus leucopus found in one grassland stand. Zapus hudsonicus, Sorex cinereus and Blarina brevicauda were found in both habitats.

Naumov, S. P. [ECOLOGICAL-GEOGRAPHICAL DIFFERENTIATION OF THE POPULATION OF THE GAME MAMMALS IN YAKUTIA (FOX, DEER, RABBIT).] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(6): 5-17. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 18

Platt, Austin Pickard. THE RELATIONSHIP OF POPULATION FLUCTUATIONS TO REPRODUCTION AND SURVIVAL IN SMALL MAMMALS. Ph.D. thesis, Univ. Mass. 161 p. 1965. [From Dissertation Abstr. 28(1B), 1967.] WR 129: 18

"Clethrionomys, Peromyscus, Napaeozapus, Blarina and Tamias."

MAMMALS--PARASITES & DISEASES

Arifdzhanov, K. A. [PROTOZOAN DISEASES OF THE ANIMALS OF UZBEKISTAN.] Fan (Tashkent). 279 p., illus. 1966. Price 1 ruble 61 kopecks. [From Biol. Abstr. 48(16), 1967, from Referat. Zhur., Biol., 1966, no. 10K2. In Russian.] WR 129: 18

Creitz, J. R. RABIES IN WILDLIFE AT FORT KNOX. Bull. Wildl. Disease Assoc. 3(1): 34. Jan. 1967. WR 129: 18

[U.S. Army Med. Lab., Ft. Meade, Md.] Rabies was found in 6 of 18 skunks examined and was absent in the fox, raccoon, opossum, mink, and cat.

Ferris, D. H., and R. D. Andrews. PARAMETERS OF A NATURAL FOCUS OF LEPTOSPIRA POMONA IN SKUNKS AND OPOSSUMS. Bull. Wildl. Disease Assoc. 3(1): 2-10, 1 fig. Jan. 1967. WR 129: 18

[Univ. Ill., Urbana.]

Gainer, J. H., and W. I. Bigler. ENCEPHALOMYOCARDITIS (EMC) VIRUS RECOVERED FROM TWO COTTON RATS AND A RACCOON. Bull. Wildl. Disease Assoc. 3(2): 47-49. Apr. 1967. WR 129: 18

[Natl. Cancer Inst., Wiscon Bldg., Bethesda, Md.] Abstract: Encephalomyocarditis in wild mammals is rarely reported. This paper documents the isolation of the encephalomyocarditis (EMC) virus in two cotton rats (Sigmodon hispidus) and a raccoon (Procyon lotor) from central Florida.

Gibbs, Clarence J., Jr., and D. Carleton Gajdusek. THE EPIDEMIOLOGY OF SLOW VIRUS INFECTIONS. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 396-404, 1 fig. 1967. WR 129: 19

[Natl. Inst. Health, Bethesda, Md.] Conclusions: We have provided information on the epidemiology of slow infections in sheep (scrapie), man (kuru), and mink (encephalopathy). The techniques successfully employed in the study of these diseases might very well be applied to the study of many of the obscure neurological syndromes frequently observed in wildlife.

Held, Joe R., Ernest S. Tierkel, and James H. Steele. RABIES IN MAN AND ANIMALS IN THE UNITED STATES, 1946-65. Public Health Repts. 82(11): 1009-1018, 4 figs. Nov. 1967. WR 129: 19

During the 20-year period 1946-65 the incidence of dog rabies in the United States declined markedly, with a concomitant decline in the number of persons who died of rabies. In the same period, however, there was an increase of cases of rabies in wildlife, principally in skunks, foxes, bats, and raccons. Wildlife species are now responsible for half the cases in man. The presence of wildlife rabies makes it imperative to continue rabies control programs for dogs. More information on the epidemiology of wildlife rabies and better methods of controlling the disease among these species are needed.--From summ.

Kozar, Zbigniew, Alojzy Ramisz, and Maria Kozar. INCIDENCE OF TRICHINELLA SPIRALIS IN SOME DOMESTIC AND WILD-LIVING ANIMALS IN POLAND. Wiad. Parazytol. 11(4): 285-298. 1965. [From Biol. Abstr. 48(14), 1967. With Polish summ.] WR 129: 19

[Polish Acad. Sci., Warsaw, Poland.]

McCulloch, W. F., B. G. Foster, and S. L. Diesch. PREVALENCE OF TOXOPLASMA ANTIBODIES IN WILD MAMMALS COLLECTED ON THREE IOWA FARMS. Bull. Wildl. Disease Assoc. 3(1): 30-31. Jan. 1967. WR 129: 19

[Univ. Iowa, Iowa City.] Abstract: The data herein reported reveal the prevalence of toxoplasma antibodies in a small number of mammals collected on three Iowa farms during October, 1964. Serologic evidence of past or persistent infection was noted in the feral house cat, gray and red fox and the opossum. Specimens found positive ranged in titer from 1:64 to 1:1024. Numbers in each category are insufficient to estimate general prevalence of infection in wild mammals in Iowa.

Murray, Max. THE PATHOLOGY OF SOME DISEASES FOUND IN WILD ANIMALS IN EAST AFRICA. East African Wildl. J. 5: 37-45. Aug. 1967. WR 129: 19

[Univ. Glasgow Vet. Hospital, Bearsden, Glasgow, Scotland.] Summary: Fifty-four post-mortem examinations were carried out on wild animals. A wide range of disease conditions was found and a number of these are discussed in detail. Two conditions of particular importance were parasitic bronchitis and muscular dystrophy; these were found in approximately one third of the antelopes examined.

Payne, J. A., G. D. Martin, J. D. Story, and G. E. Cosgrove. ELECTROPHORESIS AS AN AID IN DETECTING PATHOLOGICAL CONDITIONS IN WILD MAMMALS. Bull. Wildl. Disease Assoc. 3(1): 21-22. Jan. 1967. WR 129: 19

[Clemson Univ., Clemson, S.C.] Abstract: Changes in the electrophoretic distribution of plasma proteins were noted in wild animals with a variety of parasitic and infectious diseases. This technique may be useful in screening for disease before death or sacrifice of animals.

Spangler, Don H., and others. PROCEEDINGS NATIONAL RABIES SYMPOSIUM / ATLANTA GEORGIA 5-6 MAY 1966. U.S. Dept. Health, Education & Welfare. ii + 145 p. 1966. WR 129: 19

Papers of particular interest to wildlifers include the following: Sporadic cases of rabies in wildlife: Relation to rabies in domestic animals and character of virus, Harald N. Johnson; Wolf, fox, and coyote rabies, R. Keith

Sikes; Rodent rabies, William G. Winkler; California state rabies control program, George L. Humphrey; Discussion--State rabies control program / Tennessee control program, Luther E. Fredrickson; Discussion--State rabies control program / Illinois rabies control law, Paul B. Doby; Rabies control in the United States--Legal aspects, H. W. Hannah; Sylvatic rabies as a recreational problem, James Asa Shield; Sylvatic rabies as an agricultural problem, Ernest E. Saulmon; The role of the Bureau of Sport Fisheries and Wildlife in rabies control, George S. Rost; Incidence of fox rabies: An index of the effectiveness of trapping as a control method, Martin B. Marx; Rabies and rabies control in Wisconsin, Daniel O. Trainer; Rabies in Puerto Rico, Eduardo E. Toro; Rabies in Canada, W. A. Moynihan; Rabies in Mexico, Jorge Cárdenas Lara; and Discussion--International rabies control / Rabies in the Americas, Pedro Acha.

SHREWS, MOLES, BATS

Arata, Andrew A., John B. Vaughn, and Maurice E. Thomas. FOOD HABITS OF CERTAIN COLOMBIAN BATS. J. Mammal. 48(4): 653-655. Nov. 1967. WR 129: 20
[Tulane Univ., New Orleans.]

Baker, Robert J. KARYOTYPES OF BATS OF THE FAMILY PHYLLOSTOMIDAE AND THEIR TAXONOMIC IMPLICATIONS. Southwestern Nat. 12(4): 407-428, 18 figs. 31 Dec. 1967. WR 129: 20
[Univ. Ariz., Tucson.]

Brown, Larry N. ECOLOGICAL DISTRIBUTION OF SIX SPECIES OF SHREWS AND COMPARISON OF SAMPLING METHODS IN THE CENTRAL ROCKY MOUNTAINS. J. Mammal. 48 (4): 617-623, 1 fig. Nov. 1967. WR 129: 20
[Univ. Southern Fla., Tampa.] Abstract: The ecological distribution of six species of shrews was studied using sunken cans in 14 montane and intermontane habitats in southern Wyoming. The vagrant shrew (Sorex vagrans) and masked shrew (Sorex cinereus) were cosmopolitan in distribution. Sorex cinereus was slightly more abundant in moist plant communities, whereas Sorex vagrans predominated in slightly drier communities. Merriam's shrew (Sorex merriami) occurred only in arid portions of the plains and foothills, and in short-grass prairie was the only shrew taken. The water shrew (Sorex palustris) occurred only along or near cold mountain streams and ponds. The dwarf shrew (Sorex nanus) and pigmy shrew (Microsorex hoyi) occupied restricted mountain habitats. The dwarf shrew was abundant in rocky locations in both alpine and subalpine plant communities; the pigmy shrew was taken only in peat-moss bogs in the spruce-fir zone. A comparison of snap traps and sunken cans as methods of collecting shrews revealed that snap traps failed to demonstrate the presence of Sorex nanus and Microsorex hoyi in areas where they were abundant. Also, densities of Sorex vagrans and Sorex cinereus indicated by snap traps were considerably below those indicated by sunken cans.

Constantine, Denny G. BAT RABIES IN THE SOUTHWESTERN UNITED STATES. Public Health Repts. 82(10): 867-888, 5 figs. Oct. 1967. WR 129: 20
[Naval Biol. Lab., Naval Supply Center, Oakland, Calif.] Data on rabies observed in bats in Calif., Ariz., N. Mex., and Colo. for periods from 3 to 12 years were examined. Diagnoses of rabies were confirmed by the fluorescent antibody or serum-virus neutralization test. Rates of rabies virus infection in clinically normal bats usually were no greater than 1% in resident bats but 2 to 3% in migratory bats. Highest rates were detected in autumn. Available evidence does not support the belief that bat rabies mortality has increased since rabies in bats was discovered in the United States. In addition to the aerosol route of rabies virus transmission observed in bat caves, certain bats, under experimental conditions, transmitted infective doses of virus to Carnivora by biting them. Transmission of rabies virus to Carnivora species by bites of certain bat species could occur in nature, particularly when such animals investigate ill bats. Transmission of virus to Carnivora appears to be tangential to the cycle in bats but, if it occurs, it may prove to be significant.--From summ.

Dapson, Richard W. GROWTH PATTERNS IN A POST-JUVENILE POPULATION OF SHORT-TAILED SHREWS (BLARINA BREVICAUDA). Am. Midland Nat. 79(1): 118-129, 7 figs. Jan. 1968. WR 129: 21
[Univ. Mich. Flint Coll., Flint.]

Dwyer, P. D. FLIGHT PATTERNS OF SOME EASTERN AUSTRALIAN BATS. Victorian Nat. 82(2): 36-41. 1965. [From Biol. Abstr. 48(20), 1967.] WR 129: 21
[Univ. New England, Armidale, New South Wales, Australia.]

Hoffmann, Robert S., and Richard S. Peterson. SYSTEMATICS AND ZOOGEOGRAPHY OF SOREX IN THE BERING STRAIT AREA. Syst. Zool. 16(2): 127-136, illus. 1967. [From Biol. Abstr. 48(21), 1967.] WR 129: 21
[Univ. Mont., Missoula.]

Layne, James N. EVIDENCE FOR THE USE OF VISION IN DIURNAL ORIENTATION OF THE BAT MYOTIS AUSTRORIPARIUS. Animal Behaviour 15(4): 409-415, 1 fig. Oct. 1967. WR 129: 21
[Archbold Biol. Sta., Lake Placid, Fla.] Summary: Normal ear-plugged and blindfolded southeastern brown bats, Myotis austroriparius, were released during the day at two stations 500 and 750 ft from the home cave. Thirty-two (33.3%) of ninety-six normal bats returned to the main or secondary entrances of the cave as compared with five (12.5%) of forty ear-plugged and none of forty-five eye-covered subjects. More bats returned from the south, the direction in which the bulk of the colony went during the evening flight two nights before the experiment, thus suggesting that differential familiarity with the local terrain may have been a factor in homing success. In addition to the fact that none returned to the cave area, blindfolded bats were obviously more disoriented than either controls or ear-plugged subjects. These results thus appear to provide further evidence that vision in bats of the suborder Microchiroptera is better developed than generally supposed and that at least under certain conditions visual cues play a significant role in the orientation of these animals. It is suggested that auditory guidance from normal bats may play a major role in the homing of blindfolded bats.

Nickel, P. A., and M. F. Hansen. HELMINTHS OF BATS COLLECTED IN KANSAS, NEBRASKA AND OKLAHOMA. Am. Midland Nat. 78(2): 481-486. Oct. 1967. WR 129: 21
[Kans. State Univ., Manhattan.] Abstract: Sixty-five bats representing five genera and eight species were examined for helminth parasites. Among the parasites collected were (Trematoda) Plagiorchis micracanthos, P. vespertilionis, Allassogonoporus marginalis, Prosthodendrium longiforme, P. swansoni, Acanthatrium spp., Dicrocoelium rileyi, Urotrema scabridum; (Cestoda) Vampirolepis christensoni, V. roudabushi, V. gertschi; (Nematoda) Capillaria palmata, Allantoshius travassosi, A. nycticeius, Molinostrongylus delicatus. The distribution of 9 of the 15 species of helminths was extended to Kansas, Nebraska, or Oklahoma with 10 new host records. The incidence of infection with helminths in bats of different sexes and species is discussed. Intensities of infection were low in spring and peaked in the fall.

Schultz, Wolfhart. STUDIEN ÜBER DEN MAGEN-DARM-KANAL DER CHIROPTEREN. EIN BEITRAG ZUM PROBLEM DER HOMOLOGISIERUNG VON ABSCHNITTEN DES SÄUGETIERDARMS. [GASTROINTESTINAL STUDIES OF CHIROPTERA. A CONTRIBUTION OF THE PROBLEM OF HOMOLOGATION OF PARTS OF THE INTESTINE OF THE MAMMALS.] Z. Wissenschaft. Zool. 171(3/4): 241-391, illus. 1965. [From Biol. Abstr. 48(18), 1967. In German.] WR 129: 21
[Neue Univ., Kiel, West Germany.]

Smith, E. Hamilton. DISTRIBUTION OF CAVE-DWELLING BATS IN VICTORIA. Victorian Nat. 82(5): 132-137. 1965. [From Biol. Abstr. 48(20), 1967.] WR 129. 21
[17 Helwig Ave., Montmorency, Australia.]

Stebbings, R. E. IDENTIFICATION AND DISTRIBUTION OF BATS OF THE GENUS PLECOTUS IN ENGLAND. J. Zool. 153(3): 291-310, 28 figs. Nov. 1967. WR 129: 22
[Furzebrook Res. Sta., Wareham, Dorset, England.]

Whitaker, John O., Jr. HOARY BAT APPARENTLY HIBERNATING IN INDIANA. J. Mammal. 48(4): 663. Nov. 1967. WR 129: 22
[Ind. State Univ., Terre Haute.] "Lasiurus cinereus."

Zykov, K. D. [RESULTS OF DESMAN COUNTS AND BANDING IN THE OKSK SANCTUARY DURING 1959-61.] Trudy Okskogo Gos. Zapovednika 6: 391-399. 1965. [From Biol. Abstr. 48(18), 1967, from Referat. Zhur., Biol., 1966, no. 3I432. Transl. of Russian abstr.] WR 129: 22

RABBITS & PIKAS

Chernikin, E. [THE WHITE HARE IN KAMCHATKA.] Okhota & Okhotnich'e Khoz. 1965(10): 23-24. 1965. [From Biol. Abstr. 48(18), 1967, from Referat. Zhur., Biol., 1966, no. 3I514. Transl. of Russian abstr.] WR 129: 22

Edwards, William R. TABLES FOR ESTIMATING AGES AND BIRTH DATES OF COTTONTAIL RABBITS, WITH SUGGESTIONS FOR HANDLING LENSES. Ill. Nat. Hist. Surv. Biol. Notes no. 59. p. 1-4, 2 figs. Dec. 1967. WR 129: 22
[Ill. Nat. Hist. Surv., Urbana.]

Flux, John E. C. REPRODUCTION AND BODY WEIGHTS OF THE HARE LEPUS EUROPAEUS PALLAS, IN NEW ZEALAND. New Zealand J. Sci. 10(2): 357-401, 20 figs. June 1967. WR 129: 22
[DSIR, Lower Hutt, New Zealand.]

Forcum, Donald L. REPRODUCTION OF NORMAL AND WHOLE-BODY IRRADIATED COTTONTAILS. J. Wildl. Mgmt. 32(1): 180-182. Jan. 1968. WR 129: 22
[Box 1435, N. Mex. State Health Dept., Roswell.] Abstract: Whole-body gamma-irradiated (250r) cottontails (Sylvilagus floridanus) confined in 25-X 60-ft outdoor pens produced litter sizes significantly smaller than normal cottontails kept as controls. Animals irradiated in 1964 tended to recover from irradiation and produce litters approaching normal size in 1965.

Hill, Edward P. III. HOMING BY A COTTONTAIL RABBIT. J. Mammal. 48(4): 648. Nov. 1967. WR 129: 22
[Ala. Dept. Conserv., Montgomery.]

Lopushinsky, T., and L. D. Fay. SOME BENIGN AND MALIGNANT NEOPLASMS OF MICHIGAN COTTONTAIL RABBITS. Bull. Wildl. Disease Assoc. 3(4): 148-151, 3 figs. Oct. 1967. WR 129: 22
[Rose Lake Wildl. Res. Center, East Lansing, Mich.] Abstract: Neoplasms were found in 19 of 170 cottontail rabbits (Sylvilagus floridanus mearnsii) necropsied at the Wildlife Pathology Laboratory, Michigan Department of Conservation, 1950-1966. Nine tumors were benign; eight fibromas and one lipoma. Six malignant lymphomas, one nephroblastoma and three undiagnosed but apparently malignant tumors, also were found. Of particular interest is the high ratio of malignant to benign neoplasms. Gross and microscopic characteristics for the neoplasms are described and a case history involving a malignant lymphoma is discussed.

Loskutov, R. I. [OCHOTONA ALPINA -- A PEST OF CEDAR TREES.] Zool. Zhur. 45 (12): 1887. 1966. [From Biol. Abstr. 48(22), 1967. In Russian with English summ.] WR 129: 22

Mathies, John B., and G. Schneider. INFLUENCE OF THE EASTERN COTTONTAIL ON TREE REPRODUCTION IN SUGAR MAPLE-BEECH STANDS OF SOUTHERN MICHIGAN. Mich. Quart. Bull. 50(1): 63-73, 1 fig. Aug. 1967. WR 129: 23

Abstract: The winter influence of the eastern cottontail rabbit on hardwood tree reproduction was examined in an old-growth and second-growth sugar maple-beech stand in southern Michigan. Areas sampled within each woodlot represented the range of intensity of past use. Seedlings of eight species were measured for height, age, and amount of previous utilization. Past rabbit use indicated that tree species preferences were similar in both woodlots. American beech, elm, and basswood were most preferred, bitternut hickory, white ash, and red oak least preferred, sugar maple and black cherry moderately utilized. Area preference appeared to be directly related to the amount of available low ground cover.

Radwan, M. A., and D. L. Campbell. SNOWSHOE HARE PREFERENCE FOR SPOTTED CATSEAR FLOWERS IN WESTERN WASHINGTON. J. Wildl. Mgmt. 32(1): 104-108, 1 fig. Jan. 1968. WR 129: 23

[Pacific NW Forest & Range Expt. Sta., Olympia, Wash.] Abstract: Relative preference by snowshoe hares (Lepus americanus washingtonii) for leaves, flower buds, and open flowers of spotted catsear (Hypochoeris radicata) was studied in western Washington. The hares demonstrated preference for open flowers, followed closely by flower buds. Leaves, alone or in presence of open flowers or flower buds, were the least preferred part of the plant. Sugar content was calculated on both fresh- and dry-weight bases, and advantages of the former method are discussed. Based on fresh weights, levels of glucose and fructose--the principal sugars of catsear--appeared to be responsible for the observed order of preference, although other factors were not ruled out.

RODENTS--MISCELLANEOUS

Adol'f, T. A. [POPULATION DYNAMICS AND POPULATION PECULIARITIES OF SMALL MAMMALS OF THE VICINITY OF MOSCOW.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(6): 18-23, illus. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 23

"Vole (Clethrionomys glareolus), bank vole, mice (field and domestic)."

Ambrose, Harrison William III. AN EXPERIMENTAL STUDY OF SOME FACTORS AFFECTING THE SPATIAL AND TEMPORAL ACTIVITY OF MICROTUS PENNSYLVANICUS. Ph.D. thesis, Cornell Univ. 81 p. 1967. [From abstr. in Dissertation Abstr. 28 (1B), 1967.] WR 129: 23

Some of the interrelationships between population density, spatial and temporal activity, and social behavior of the field mouse, Microtus pennsylvanicus were experimentally analyzed. This involved the use of an essentially direct observational technique, that of radio-isotopic tracing of mice in large enclosures in natural habitat. Specific objectives of the study were: 1) to gain some insight into the various factors influencing the size, shape, rate of establishment, and site preference of the home ranges of individual mice; 2) to obtain information on the diel activity patterns of individuals of this species under natural conditions; and 3) to investigate the influence of density and social interactions on spatial and temporal activity parameters.

Avetisyan, G. A., N. S. Novokreshchenova, E. V. Yundin, and L. G. Markaryan. [EXPERIENCE IN THE STUDY OF THE FEEDING HABITS OF FLEAS FOUND ON THE COMMON VOLE (MICROTUS ARVALIS UNDER ALPINE CONDITIONS) IN ARMENIA USING RADIOISOTOPES.] Izvest. Akad. Nauk Arm. SSR Biol. Nauk 18(9): 102-106. 1965. [From Biol. Abstr. 48(22), 1967. In Russian.] WR 129: 23

Bol'shakov, V. N., and L. S. Marinina. [MORPHO-PHYSIOLOGICAL COMPARISONS OF (COMMON FIELD) MICE FROM VARIOUS PARTS OF THE AREA OF DISTRIBUTION.] Izvest. Akad. Nauk Turkm. SSR Ser. Biol. Nauk 6: 60-64. 1966. [From Biol. Abstr. 48 (23), 1967. In Russian.] WR 129: 23

Brown, Larry N. SEASONAL ACTIVITY PATTERNS AND BREEDING OF THE WESTERN JUMPING MOUSE (ZAPUS PRINCEPS) IN WYOMING. Am. Midland Nat. 78(2): 460-470, 2 figs. Oct. 1967. WR 129: 24
[Univ. Wyo., Laramie.]

Christian, John J. ADRENAL WEIGHT IN PRAIRIE DEER MICE (PEROMYSCUS MANICULATUS BAIRDII) AND WHITE-FOOTED MICE (PEROMYSCUS LEUCOPUS NOVEBORACENSIS). J. Mammal. 48(4): 598-605, 5 figs. Nov. 1967. WR 129: 24
[Albert Einstein Med. Center, Philadelphia, Pa.]

Coe, M. J. PRELIMINARY NOTES ON THE EASTERN KENYA SPRINGHARE, PEDETES SURDASTER LARVALIS HOLLISTER. East African Wildl. J. 5: 174-177, 2 figs. Aug. 1967. WR 129: 24
[Univ. Coll., Nairobi, Kenya.] Details of 2 births.

Cunningham, Harry Norman, Jr. AN ECOLOGICAL STUDY OF THE NORTHERN POCKET GOPHER, THOMOMYS TALPOIDES (RICHARDSON) IN RELATION TO AVAILABLE FOOD RESOURCES ALONG AN ALTITUDINAL TRANSECT. Ph.D. thesis, Univ. Pittsburgh. 223 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 24

Desha, Paul G. VARIATION IN A POPULATION OF KANGAROO RATS, DIPODOMYS ORDII MEDIUS (RODENTIA: HETEROMYIDAE) FROM THE HIGH PLAINS OF TEXAS. Southwestern Nat. 12(3): 275-289, 5 figs. 31 Oct. 1967. WR 129: 24
[Tarrant County Junior Coll., Fort Worth, Texas.] Abstract: Variation studied in 127 specimens of Dipodomys ordii medius from Lynn County, Texas, included quantitative differences in external, cranial, mandibular and bacular measurements and shapes of bacula, palatine, basioccipitalbasisphenoid complex, and interparietal bones. Males were larger and more variable than females in most measurements. Significant sexual dimorphism was found in weight and in body and hind foot lengths, in upper diastemal, lower diastemal, basal, greatest skull, nasal and bullar-premaxillary lengths, and in interorbital, maxillary and greatest skull widths. Supraoccipital width and pelage color showed the most variation; greatest skull depth and length showed the least. Extent of variation in this one population of D. o. medius indicates a need to re-evaluate all of the subspecies of D. ordii, employing statistical methods.

Dunaway, Paul B. LIFE HISTORY AND POPULATIONAL ASPECTS OF THE EASTERN HARVEST MOUSE. Am. Midland Nat. 79(1): 48-67, 5 figs. Jan. 1968. WR 129: 24
[Oak Ridge Natl. Lab., Oak Ridge, Tenn.] Numbers, reproduction, weight, trap-revealed survival times, activities, habitat, metabolism and hematology of Reithrodontomys humulis.

Dyer, W. G., and O. W. Olsen. HELMINTHS OF THE DEER MOUSE, (PEROMYSCUS MANICULATUS) FROM NORTHERN COLORADO. Bull. Wildl. Disease Assoc. 3(1): 35-36. Jan. 1967. WR 129: 24
[Colo. State Univ., Fort Collins.]

Eisenberg, John F. A COMPARATIVE STUDY IN RODENT ETHOLOGY WITH EMPHASIS ON EVOLUTION OF SOCIAL BEHAVIOR, I. Proc. U.S. Natl. Museum 122(3597): 1-51, 9 figs. 1967. WR 129: 24
Based on studies of selected species from three rodent families including the following genera: Peromyscus, Tatera, Gerbillus, Dipodillus, Pachyuromys, Meriones, Jaculus, Allactaga, Heteromys, Liomys, Perognathus, and Dipodomys. Both German and English equivalents of all behavioral terms used are presented to avoid terminological confusion.

Fairley, J. S. NOTES ON THE FOOD OF THE FIELDMOUSE IN IRISH WOODLAND (APODEMUS SYLVATICUS, CLETHRIONOMYS-GLAREOLUS). Irish Nat. J. 15(10): 300-302. 1967. [From Biol. Abstr. 48(18), 1967.] WR 129: 24
[Queen's Univ., Belfast, North Ireland.]

French, Norman R., Bernardo G. Maza, and Arnold P. Aschwanden. LIFE SPANS OF DIPODOMYS AND PEROGNATHUS IN THE MOJAVE DESERT. J. Mammal. 48(4): 537-548, 2 figs. Nov. 1967. WR 129: 25

[Univ. Calif. Lab. Nuclear Med. & Radiation Biol., 900 Veteran Ave., Los Angeles.] Abstract: Rodent populations were studied by live-trapping in four 20-acre plots for a 2.5-year period. Three of the plots were fenced to prevent dispersal. One of the fenced areas was irradiated at low level; the rodents received an average of 1 r/day. The life span of a rodent was defined as the time between the first and last appearance in the trapping records. Mean life spans in the fenced plots that were not irradiated were between 3.7 and 5.0 months for Perognathus formosus, P. longimembris, Dipodomys merriami and D. microps. Mean life spans were shorter in the irradiated plot and shortest in the unfenced plot. The values for the unfenced plot reflect the additional influences of dispersal and kit fox predation. The kit fox is the only important mammalian predator, but accounts for an insignificant amount of mortality in the rodent population. The red racer is a predator of undetermined importance. Greatest mortality occurs in the few months following first capture. Twenty-five P. longimembris survived from 3 to 5 years, a remarkably long time for a small (6 to 8 g) mammal. Periodic torpor probably aids their survival.

Hansen, R. M., and R. F. Beck. HABITAT OF POCKET GOPHERS IN COCHETOPA CREEK DRAINAGE, COLORADO. Am. Midland Nat. 79(1): 103-117, 5 figs. Jan. 1968. WR 129: 25

[Colo. State Univ. Expt. Sta., Fort Collins.] Conclusions: In this study we were unable to identify important differences between sites supporting pocket gophers and adjacent unoccupied sites in alpine, subalpine and shrub-grassland study areas. It appears that pocket gophers could occupy more land in each of the three habitats.

Hudson, B. W., and L. Kartman. THE USE OF THE PASSIVE HEMAGGLUTINATION TEST IN EPIDEMIOLOGIC INVESTIGATIONS OF SYLVATIC PLAGUE IN THE UNITED STATES. Bull. Wildl. Disease Assoc. 3(2): 50-59, 1 fig. Apr. 1967. WR 129: 25

[Communicable Dis. Center, San Francisco, Calif.] Abstract: Serologic epidemiology was applied to investigations of wild rodent plague in areas of California, Arizona, Colorado, and Utah. Results indicated that the passive hemagglutination test can be of value in detecting antibodies to the water-soluble Fraction Ib antigen of Pasteurella pestis in wild rodent or other mammalian sera. Positive tests were obtained with sera of mammals from all areas with a concurrent or recent history of wild rodent plague. Thus, the current status of P. pestis infection in mammals was determined, as well as a retrospective determination of past infection. Some evidence was found suggesting that certain plague-resistant rodents that have a wide geographic distribution (i.e., Peromyscus maniculatus) may serve as "indicator animals" in plague investigations.

Inglis, Jack Morton. THE POPULATION ECOLOGY OF THE ORD KANGAROO RAT (DIPODOMYS ORDI). Ph.D. thesis, Texas A & M Univ. 272 p. 1967. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 25

This paper reports an attempt to relate the behavioral and physiological status of the Ord kangaroo rat to the availability of seed food and other environmental factors as measured on the Canadian River Sands in the northeastern Texas Panhandle during the years 1955 through early 1957. Food supplies became moderately abundant in 1955 as a result of slightly less than average rainfall; conditions were catastrophic due to drouth in 1956. Kangaroo rat densities increased in response to the first conditions and failed in response to the second. This was due to both reproductive failure and increased mortality.

Lackey, James A. GROWTH AND DEVELOPMENT OF DIPODOMYS STEPHENSI. J. Mammal. 48(4): 624-632, 5 figs. Nov. 1967. WR 129: 25

[Univ. Mich., Ann Arbor.] The growth and development of 16 young from six litters of the kangaroo rat, Dipodomys stephensi, are described in detail from birth to 63 days.--From abstr.

Lackey, James A. BIOSYSTEMATICS OF HEERMANNI GROUP KANGAROO RATS IN SOUTHERN CALIFORNIA. Trans. San Diego County Nat. Hist. 14(21): 313-344, 8 figs. 13 Dec. 1967. In English with Spanish summ. WR 129: 26
[Univ. Mich., Ann Arbor.] The relationships of Dipodomys cascus, D. stephensi, and D. agilis are analyzed statistically by a multiple range test; D. antiquarius is treated separately.--From abstr.

Layne, James N. INCIDENCE OF POROCEPHALUS CROTALI (PENTASTOMIDA) IN FLORIDA MAMMALS. Bull. Wildl. Disease Assoc. 3(3): 105-109, 1 fig. July 1967. WR 129: 26
[Archbold Biol. Sta., Lake Placid, Fla.] Nymphs of Porocephalus crotali were found in 20 (0.9%) of 2,254 mammals examined from localities in 22 counties in Florida. Of 27 species included in the survey, infections were found in the Florida mouse, Peromyscus floridanus; cotton mouse, Peromyscus gossypinus; and cotton rat, Sigmodon hispidus.--From abstr.

MacMillen, Richard E., and Anthony K. Lee. AUSTRALIAN DESERT MICE: INDEPENDENCE OF EXOGENOUS WATER. Science 158(3799): 383-385, 1 fig. 20 Oct. 1967. WR 129: 26
[Pomona Coll., Claremont, Calif.] Abstract: Certain Australian desert mice can survive and may gain weight on a diet of dry seed without drinking water. Urine concentrations for two of the three species studied are the highest recorded for mammals. The kidneys appear to be the major avenue of water conservation.

Morris, Ralph D. A NOTE ON THE HOMING BEHAVIOUR OF PEROMYSCUS MANICULATUS OSGOODI. Canadian Field-Nat. 81(3): 225-226. July-Sept. 1967. WR 129: 26
[Univ. Saskatchewan, Saskatoon, Canada.]

Packard, Robert L. AN ECOLOGICAL STUDY OF THE FULVOUS HARVEST MOUSE IN EASTERN TEXAS. Am. Midland Nat. 79(1): 68-88, 9 figs. Jan. 1968. WR 129: 26
[Texas Technol. Coll., Lubbock.] Habitat, population fluctuations, population relationships with other species, movements and trap range, density patterns, sex and age composition, breeding patterns and behavior and activity are discussed.

Panteleev, P. A. [TECHNIQUE OF AGE DETERMINATION OF WATER VOLES (ARVICOLA TERRESTRIS) IN THE AUTUMN POPULATION.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(4): 20-26, illus. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 26
[Acad. Sci. USSR, Moscow, USSR.]

Pattie, Donald L. OBSERVATIONS ON AN ALPINE POPULATION OF YELLOW-BELLIED MARMOTS (MARMOTA FLAVIVENTRIS). Northwest Sci. 41(2): 96-102, 2 figs. 1967. WR 129: 26
[Pacific Lutheran Univ., Tacoma, Wash.]

Patton, James L. CHROMOSOMES AND EVOLUTIONARY TRENDS IN THE POCKET MOUSE SUBGENUS PEROGNATHUS (RODENTIA: HETEROMYIDAE). Southwestern Nat. 12(4): 429-438, 6 figs. 31 Dec. 1967. WR 129: 26
[Univ. Ariz., Tucson.]

Petersen, Michael K. ELECTROPHORETIC BLOOD-SERUM PATTERNS IN SELECTED SPECIES OF PEROMYSCUS. Am. Midland Nat. 79(1): 130-148, 5 figs. Jan. 1968. WR 129: 26
[Mich. State Univ., East Lansing.]

Price, Edward Owen. BEHAVIORAL CHANGES IN THE DEERMOUSE, PEROMYSCUS MANICULATUS BAIRDII, AFTER SEVENTEEN YEARS OF DOMESTICATION: REACTION TO NOVEL STIMULI. Ph.D. thesis, Mich. State Univ. 166 p. 1967. [From Dissertation Abstr. 28(5B), 1967.] WR 129: 26

Rood, J. P., and Frederick H. Test. ECOLOGY OF THE SPINY RAT, HETEROMYS ANOMALUS, AT RANCHO GRANDE, VENEZUELA. Am. Midland Nat. 79(1): 89-102, 3 figs. Jan. 1968. WR 129: 27
[Univ. Mich., Ann Arbor.]

Schmidly, David J., and Robert L. Packard. SWIMMING ABILITY IN POCKET MICE. Southwestern Nat. 12(4): 480-482. 31 Dec. 1967. WR 129: 27
[Texas Technol. Coll., Lubbock.] "Peromyscus apache, P. merriami, P. flavescens, and P. flavus."

Sharp, Homer F., Jr. FOOD ECOLOGY OF THE RICE RAT, ORYZOMYS PALUSTRIS (HARLAN), IN A GEORGIA SALT MARSH. J. Mammal. 48(4): 557-563, 1 fig. Nov. 1967. WR 129: 27
[Emory Univ., Oxford, Ga.] Abstract: Examination of 22 stomachs of rice rats taken in summer and fall indicated a predominance of animal food, chiefly insects and small crabs, although plant remains were present in several stomachs. Predation on eggs and young of marsh wrens was known to occur. Individuals reared in the laboratory from nestlings taken from a Georgia salt marsh preferred foods of an animal source, and made greater weight gains when animal material constituted all or part of the diet. While captives were able to assimilate both plant and animal food efficiently ((ingested energy minus fecal energy)/ingested energy X 100 = 88-95%), they ingested more calories when animal food was offered. A daily intake level of 0.15 Kcal/Kcal body tissue was required to maintain body weight in the laboratory; ingestion rates above this level resulted in weight gains. It is concluded that during the summer months the trophic niche of the rice rat in the salt marsh ecosystem is that of a carnivore.

Shellhammer, Howard S. CYTOTAXONOMIC STUDIES OF THE HARVEST MICE OF THE SAN FRANCISCO BAY REGION. J. Mammal. 48(4): 549-556, 4 figs. Nov. 1967. WR 129: 27
[San Jose State Coll., San Jose, Calif.] "Reithrodontomys."

Sheppe, Walter. THE EFFECT OF LIVETRAPPING ON THE MOVEMENTS OF PEROMYSCUS. Am. Midland Nat. 78(2): 471-480, 2 figs. Oct. 1967. WR 129: 27
[Calif. Acad. Sci., Golden Gate Park, San Francisco.] Abstract: The movements of P. leucopus in small island populations were studied by means of nightly smoked-paper tracking supplemented by occasional livetrapping. The mice left enough track records on nights when trapped to show that they often do not enter the first trap encountered and usually move through their home ranges for some time before being trapped. This suggests that in livetrapping studies there may be little or no bias in favor of traps located near the nest. On the other hand, the movements of mice for several nights after being trapped were markedly altered. There were many more track records than usual on such nights, probably partly because of increased activity and perhaps partly because of an altered response to the track shelters (heightened exploratory behavior). Results with P. maniculatus show that much of this increased activity occurs in daylight immediately after release from traps. P. leucopus sometimes traveled far outside their former home ranges on nights after being trapped, sometimes resulting in a permanent shift in range. Because of these effects of livetrapping, this is not a satisfactory method of studying home ranges or activity patterns, but there is little indication that the results of previous studies have been seriously affected by the after-trapping effect.

Terman, C. Richard, and Jan F. Sassaman. SEX RATIO IN DEER MOUSE POPULATIONS. J. Mammal. 48(4): 589-597. Nov. 1967. WR 129: 27
[Coll. William & Mary, Williamsburg, Va.] Abstract: Studies of deer mouse populations in nature have recorded significantly more males than females (.005 is greater than P). Since most studies have utilized trapping techniques, greater wandering tendencies of males and consequently greater trap exposure have been suggested to explain the excess males recorded. Tabulation of the sex ratios at birth of more than 500 litters from a laboratory colony of Peromyscus maniculatus bairdii indicate significantly more males than females

produced (.025 is greater than P). Excess production of males has also been recorded for freely growing laboratory populations of the same species. Peromyscus, therefore, appears to be an additional genus exhibiting aberrant sex ratios.

Ubelaker, John E., and Wendy L. Pearse. NEW HOSTS AND DISTRIBUTION RECORDS FOR MONILIFORMIS CLARKI (WARD, 1917). Bull. Wildl. Disease Assoc. 3(4): 177. Oct. 1967. WR 129: 28

[Colo. State Univ., Fort Collins.] "Zapus princeps, Eutamias dorsalis, and Eutamias bulleri."

Whitaker, John O., Jr. HABITAT RELATIONSHIPS OF FOUR SPECIES OF MICE IN VIGO COUNTY, INDIANA. Ecology 48(5): 867-873, 1 fig. Late Summer 1967. WR 129: 28

[Ind. State Univ., Terre Haute.] When Peromyscus leucopus and Mus musculus occurred together, the first species was more abundant than when alone, and the second species was less abundant than when alone. P. maniculatus and M. musculus were more abundant when together than when alone in grassy and weedy fields and in winter. Both were less abundant when together than when alone in soybeans, cultivated fields, and corn fields. P. maniculatus was more abundant than M. musculus when the two were together in wheat stubble. In M. musculus-Microtus ochrogaster and P. leucopus-M. ochrogaster combinations, competing species were unaffected or more abundant than when alone.--Courtesy/ Paul A. Stewart.

Youngman, Phillip M. INSULAR POPULATIONS OF THE MEADOW VOLE, MICROTUS PENNSYLVANICUS, FROM NORTHEASTERN NORTH AMERICA, WITH DESCRIPTIONS OF TWO NEW SUBSPECIES. J. Mammal. 48(4): 579-588, 4 figs. Nov. 1967. WR 129: 28

[Natl. Museum Canada, Ottawa.] Insular populations of Microtus pennsylvanicus from the Magdalen Islands, Quebec, and Grand Manan Island, New Brunswick, are compared with mainland populations and described as new subspecies--Microtus pennsylvanicus shattucki.--From abstr.

RATTUS & MUS

Erpino, Michael J. COPULATORY BEHAVIOR IN THE WHITE-TAILED PRAIRIE DOG. Am. Midland Nat. 79(1): 250-251. Jan. 1968. WR 129: 28

[Univ. Wyo., Laramie.] "Cynomys leucurus."

Quadagno, David M. LITTER SIZE AND IMPLANTATION SITES IN FERAL HOUSE MICE. J. Mammal. 48(4): 677. Nov. 1967. WR 129: 28

[Univ. Ill., Urbana.]

Sprock, C. Merle, Walter E. Howard, and Fred C. Jacob. SOUND AS A DETERRENT TO RATS AND MICE. J. Wildl. Mgmt. 31(4): 729-741, 8 figs. Oct. 1967. WR 129: 28

[RFD 5, Creeksedge Road, Davis, Calif.] Abstract: Under laboratory conditions, a continuous sound at less than 120 db (decibles) at any given frequency from 4-19 kc (kilocycles per second) was ineffective in deterring wild and laboratory rats (Rattus norvegicus) from entering and foraging in interconnected boxes (6 X 6 X 5 ft). When the sound output was intermittent and the frequency varied an entire octave (6-12 kc), and was out of phase with the off-on timer, wild rats were effectively repelled. Intermittent sounds of half-octaves (6-9, 9-12, 12-16 kc) were not as effective as frequencies varied through an entire octave. In a mouse-infested warehouse, an ultrasonic (19 kc) burglar alarm proved ineffective in frightening house mice (Mus musculus). Only under laboratory conditions can wild rodents apparently be controlled by sounds that will cause them to die from epileptiform seizures. The necessary intensities of 130 db or above are too costly and dangerous for use in the field. One experiment utilizing rat distress calls effectively repelled the test rat. In our experiments, ultrasonics did not repel rats and mice from any of the tested areas. Data on behavioral responses of rats to sound pressures are still insufficient to answer all questions on the potential uses of sound as a deterrent to rats.

Adams, Lowell, and Stanley G. Watkins. ANNULI IN TOOTH CEMENTUM INDICATE AGE IN CALIFORNIA GROUND SQUIRRELS. J. Wildl. Mgmt. 31(4): 836-839, 6 figs. Oct. 1967. WR 129: 29

[Univ. Calif. Med. Center, G. W. Hooper Foundation, San Francisco.] Abstract: The age of California ground squirrels (Spermophilus beecheyi) is revealed by annual rings in the cementum of the third molar tooth. A dark ring lies adjacent to the dentine at birth. Upon this a light ring is laid during the first summer, followed by a dark ring in winter. Successive light and dark rings are laid down in successive summers and winters. Although the number of rings does not always conform exactly to the number of years, the method is precise enough in a large percentage of cases to permit age determination to the nearest year through the first 4 years. After that the rings tend to deteriorate and should not be used as an age criterion.

Barrier, M. J., and F. S. Barkalow, Jr. A RAPID TECHNIQUE FOR AGING GRAY SQUIRRELS IN WINTER PELAGE. J. Wildl. Mgmt. 31(4): 715-719, 4 figs. Oct. 1967. WR 129: 29

[N.C. State Univ., Raleigh.] Abstract: The guard hairs and underfur in the lateral rump region of the gray squirrel (Sciurus carolinensis) are characteristically marked by combinations of black, yellow, and white bands in the non-melanistic forms. During the course of a 10-year study involving over 2,500 marked gray squirrels (Sciurus carolinensis carolinensis Gmelin) it was discovered that animals in the winter coat could be separated into nestling, juvenile, subadult, and adult age-classes on the basis of pelage characters. The nestling pelage is soft, woolly, dull in appearance; there is no evidence of a body molt, and a white terminal band extends at least 1/3 the length of the tail hair. Juvenile pelage shows evidence of a body molt and at least some five-banded, black-tipped nestling guard hairs remain in the lateral rump region. In adults and subadults the white-tipped guard hairs of the lateral rump region are four-banded. When the hair of the adult pelage is parted there appears to be a distinct yellowish band in the basal area; in the subadult the band is diffuse or indistinct. From 80 to 95% of squirrels captured in the fall and winter could be correctly aged by use of a key based on these pelage characters.

Bekenov, A. [HABITATS, ABUNDANCE, AND BURROWING ACTIVITY OF THE LONG-TAILED SUSLIK IN THE HIGHLANDS OF THE DZUNGARIAN ALATAU.] Izvest. Akad. Nauk Kaz. SSR Ser. Biol. Nauk 4: 49-56. 1965. [From Biol. Abstr. 48(23), 1967, from Referat. Zhur., Biol., 1966, no. 3I521. Transl. of Russian abstr.] WR 129: 29

Bradley, W. Glen. HOME RANGE, ACTIVITY PATTERNS, AND ECOLOGY OF THE ANTELOPE GROUND SQUIRREL IN SOUTHERN NEVADA. Southwestern Nat. 12(3): 231-251, 10 figs. 31 Oct. 1967. WR 129: 29

[Nev. Southern Univ., Las Vegas.] Home ranges by the greatest distance between captures method averaged 20.6 acres as contrasted with an estimate of 14.9 acres by the minimum home range plus estimate method and eight acres by the distance between random points of capture method. Data from nine squirrels captured 20 or more times, strongly indicate that approximately 20 captures are needed for a reliable estimation of home range. In addition captures should occur over a period of at least one month for a good estimate of home range in this species. Average daily range of movements indicate that this ground squirrel utilizes an area of approximately four acres for periods of one or more days. Over a period of time a ground squirrel moves throughout all of the segments of a home range. The area of daily activity may be called a daily range in contrast to the home range which contains several daily ranges. The large home range consisting of several smaller daily ranges enables ground squirrels to utilize a large area in search of a wide variety of seasonal food items. During periods of unfavorable weather, short excursions can be made from numerous burrows found within the daily ranges thereby avoiding the extremes of the desert environment.--From abstr.

Cameron, Duncan M., Jr. CARNIVOROUS BEHAVIOR OF THE GOLDEN-MANTLED GROUND SQUIRREL. Murrelet 48(1): 13. Jan-Apr. 1967. WR 129: 30
[Univ. Calif., Davis.] "Citellus lateralis."

Dorney, Robert S. QUANTITATIVE DATA ON FOUR SPECIES OF EIMERIA IN EASTERN CHIPMUNKS AND RED SQUIRRELS. J. Protozool. 13(4): 549-550. 1966. [From Biol. Abstr. 48(7), 1967.] WR 129: 30
[Pan Am. Union, Washington, D.C.]

Gruzdev, V. V. [DISTRIBUTION OF THE LITTLE SOUSLIK BETWEEN THE RIVERS DNIEPER AND SEVERSKII DONETS.] Biol. Nauk 2: 32-36, illus. 1966. [From Biol. Abstr. 48(22), 1967. In Russian.] WR 129: 30

Pack, James C., Henry S. Mosby, and Paul B. Siegel. INFLUENCE OF SOCIAL HIERARCHY ON GRAY SQUIRREL BEHAVIOR. J. Wildl. Mgmt. 31(4): 720-728, 5 figs. Oct. 1967. WR 129: 30
[W. Va. Dept. Nat. Resources, P.O. Box 205, Marlinton.] Abstract: Based on 750 interactions, observed for the most part at feeding stations, gray squirrels in two woodlots were ranked in a social hierarchy by the percentile rank formula and by the linear method, in the first known effort to rank a wild population by both techniques. A high correlation existed between the two methods of designating hierarchial rank. It appeared that a single hierarchy, involving both sexes, was established in each woodlot and that the social organization was a "linear right" hierarchy characterized by stability. Males were more dominant than females, and social rank was higher with age. The dominant male squirrels were responsible for the majority of the observed sexual contacts with females. Size of minimum home range increased slightly with social rank. Wind was the most important environmental factor restricting feeding activity but subordinate squirrels in the social hierarchy were not more active than dominant squirrels during inclement weather. Circumstantial information suggests that "shock" mortality was greater among low-ranked squirrels.

Wolfe, James Leonard. A STUDY OF THE BEHAVIOR OF THE EASTERN CHIPMUNK, TAMIAS STRIATUS. Ph.D. thesis, Cornell Univ. 153 p. 1966. [From Dissertation Abstr. 28(1B), 1967.] WR 129: 30

Zalesskii, A. N., and A. K. Tolebaev. [SPECIFIC MORPHOLOGICAL AND ECOLOGICAL FEATURES OF THE SUSLIKS FOUND IN THE LEFT BANK AREA OF THE IRTYSH RIVER IN PAVLODAR OBLAST.] Trudy Nauch.-Issled. Inst. Zashch. Rast. Kaz. SSR 8: 184-200. 1964. [From Biol. Abstr. 48(23), 1967, from Referat. Zhur., Biol., 1965, no. 101204. In Russian.] WR 129: 30

BEAVER

D'yakov, Yu. [THE RIVER BEAVER.] Okhota & Okhotnich'e Khoz. 1965(10): 20-22. 1965. [From Biol. Abstr. 48(18), 1967, from Referat. Zhur., Biol., 1966, no. 3I529. Transl. of Russian abstr.] WR 129: 30

Larson, Joseph S., and F. C. van Nostrand. AN EVALUATION OF BEAVER AGING TECHNIQUES. J. Wildl. Mgmt. 32(1): 99-103, 2 figs. Jan. 1968. WR 129: 30
[Mass. Coop. Wildl. Res. Unit, Amherst.] Abstract: Methods of estimating the age of beavers (Castor spp.) based on a combination of pelt size and weight, skull measurements, and several external morphological measurements are evaluated by comparing these criteria with the recent and more reliable dental development technique. The earlier methods permit separation of the young-of-the-year from the remainder of the population, but cannot be effectively used on beavers over 12 months old. Revisions of the dental aging technique are presented as are data on estimating whole weights from skinned beaver carcasses.

BEAVER--Continued

Lavrov, L. [CANADIAN BEAVERS IN KARELIA.] Okhota & Okhotnich'e Khoz. 1965 (9): 13-16. 1965. [From Biol. Abstr. 48(18), 1967, from Referat. Zhur., Biol., 1966, no. 1I539. Transl. of Russian abstr.] WR 129: 31

Safonov, V. G. [SPECIFIC MORPHOLOGICAL FEATURES AND STRUCTURE OF BEAVER POPULATIONS.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(4): 5-19, illus. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 31
[All-Union Res. Inst. Anim. Raw Mater. Fur, Kirov, USSR.]

MUSKRAT & NUTRIA

Dubienska, Wanda, and Witold Scheuring. PRZYCZYNEK DO POZNANIA PASOZYTOW NUTRII NA TERENIE WOJ. ZIELONOGORSKIEGO. [A CONTRIBUTION TO THE RECOGNITION OF PARASITES OF NUTRIA IN THE ZIELONA GORA PROVINCE.] Med. Weter. 21(5): 292-293. 1965. [From Biol. Abstr. 48(23), 1967. In Polish.] WR 129: 31
[Ul. Bohaterow, Warsaw, Poland.]

Evans, James, and A. Lorin Ward. SECONDARY POISONING ASSOCIATED WITH ANTICOAGULANT-KILLED NUTRIA. J. Am. Vet. Med. Assoc. 151(7): 856-861. Oct. 1967. WR 129: 31
[Jackrabbit Res. Sta., Twin Falls, Idaho.] Secondary poisoning resulted when meat from anticoagulant-killed nutria (Myocastor coypus) was fed to commercial mink and mongrel dogs. This occurred with both the coumarin and indandione groups of anticoagulants; the coumarin group was represented by an oxycoumarin and a 50% warfarin and 50% sulfaquinoxaline preparation, and the indandione group by diphacinone, pindone, and PMP. Fifteen of 16 mink and 9 of 17 dogs died directly from eating the meat, and 1 mink and 2 dogs died from hemorrhage when blood samples were taken. Bioassay showed that the poison accumulated in the livers of nutria killed with the oxycoumarin. The demand for nutria as mink and pet food, coupled with the secondary poisoning hazards, rules out the use of these rodenticides for nutria control in the coastal areas of the United States.--From summ.

Grundmann, Albert W., and Yuan-Hwang Tsai. SOME PARASITES OF THE MUSKRAT, ONDATRA ZIBETHICUS OSOYOOSENSIS (LORD, 1863) MILLER, 1912 FROM THE SALT LAKE VALLEY, UTAH. Am. Microscop. Soc. Trans. 86(2): 139-144. 1967. [From Biol. Abstr. 48(22), 1967.] WR 129: 31
[Univ. Utah, Salt Lake City.]

BEARS

Flyger, Vagn, Martin W. Schein, Albert W. Erickson, and Thor Larsen. CAPTURING AND HANDLING POLAR BEARS--A PROGRESS REPORT ON POLAR BEAR ECOLOGICAL RESEARCH. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 107-119, 5 figs. 1967. WR 129: 31
[Univ. Md., College Park.] Conclusions: Polar bears can now be captured in large numbers for the study of their migration and population dynamics. However, in order to fully discover migratory patterns and determine the number of polar bears in existence it is necessary for Canada, Denmark, Norway, the USSR and the USA, nations which border the polar basin, to work together. Tagging a large number of polar bears will be necessary as well as an exchange of biologists between the nations to insure close cooperation and to gather uniform data. The Norwegians and Americans have worked closely and effectively together and hopefully this spirit of cooperation can be extended to the other nations. The drugs available now (especially M.99) are useful in capturing polar bears but further research needs to be done with other drugs and with other techniques in other portions of the arctic under both summer and winter conditions.

RACCOON, RINGTAIL, COATI

Berner, Alfred, and Leslie W. Gysel. RACCOON USE OF LARGE TREE CAVITIES AND GROUND BURROWS. J. Wildl. Mgmt. 31(4): 706-714, 3 figs. Oct. 1967. WR 129: 32
[Mich. State Univ., East Lansing.] Abstract: During the period July 4, 1964, to June 30, 1965, all but two of the large tree cavities (12) and all of the ground burrows (3) in a 13.9-acre woodlot, were electrically monitored for 320 days to determine when and how they were used by raccoons (Procyon lotor). Of the total activity registered by an electric recorder, 95% was attributable to raccoons (55.5% due to den occupancies and 39.5% to the investigation of the cavities and burrows). The remaining activity was attributed to fox squirrels (Sciurus niger) (4.5%) and a striped skunk (Mephitis mephitis) (0.5%). Activity was greatest during April and May, primarily because a female raccoon and her litter were present. Raccoon activity was least during August and September when the weather was mild and food plentiful. The most den occupancies by raccoons were in April, May, November, and December and the least in August and September. Raccoon activity at the entrance to dens peaked at 4:00-5:00 AM and at 7:00-8:00 PM and was extremely low from 2:00-5:00 PM. This movement was affected more by sunset than by sunrise. Raccoons were influenced noticeably by temperature fluctuations, particularly from June through February, and microclimates of the dens appeared to influence the amount and time of den occupancy.

Lynch, Gerry M. LONG-RANGE MOVEMENT OF A RACCOON IN MANITOBA. J. Mammal. 48(4): 659-660, 1 fig. Nov. 1967. WR 129: 32
[Univ. Wis., Madison.]

Sunquist, Melvin E. EFFECTS OF FIRE ON RACCOON BEHAVIOR. J. Mammal. 48(4): 673-674, 1 fig. Nov. 1967. WR 129: 32
[Univ. Minn., Minneapolis.]

MUSTELIDS

Ebert, Earl E. A FOOD HABITS STUDY OF THE SOUTHERN SEA OTTER, ENHYDRA LUTRIS NEREIS. Calif. Fish & Game 54(1): 33-42, 1 fig. Jan. 1968. WR 129: 32
Abstract: Feeding behavior of sea otters was studied during the spring and summer of 1966. Shoreside observations and SCUBA diving were employed to note foraging habits relative to food availability. Results of prior sea otter food habits studies are compared with this study. A general agreement of food types between this study and prior studies was found, but a wide variance was apparent when percentage values of foods ingested by otters were compared. Availability appears to be the key factor in sea otter feeding habits. Preferred foods are sea urchins, abalones, and crabs. A study to interpret the geographic expansion of sea otters and determine their range carrying capacity is recommended.

Fairley, J. S. AN INDICATION OF THE FOOD OF THE BADGER IN NORTH-EAST IRELAND. (MELES MELES). Irish Nat. J. 15(9): 267-269. 1967. [From Biol. Abstr. 48(23), 1967.] WR 129: 32
[Queen's Univ., Belfast, N. Ireland.]

Gentry, R. L., and R. S. Peterson. UNDERWATER VISION OF THE SEA OTTER. Nature 216(5114): 435-436, 2 figs. 4 Nov. 1967. WR 129: 32
[Univ. Calif., Santa Cruz.] Abstract: A sea otter, Enhydra lutris, was trained to select the larger of two disks simultaneously presented under water, and its ability to discriminate between disks of nearly the same size was tested. The results provide an index of visual acuity, and suggest that Enhydra has slightly poorer underwater vision than Zalophus or Phoca.

Hoglund, Nils H. OM SVENSKA VILDMINKARS NARING. [ON THE FOOD OF THE SWEDISH WILD MINK (MUSTELA VISON).] Zool. Revy 28(4): 91-96. 1966. [From Biol. Abstr. 48(18), 1967. In Swedish with English summ.] WR 129: 32

Knudsen, George J., and James B. Hale. FOOD HABITS OF OTTERS IN THE GREAT LAKES REGION. J. Wildl. Mgmt. 32(1): 89-93. Jan. 1968. WR 129: 33
[Wis. Conserv. Div., Madison.] Abstract: Food items were identified in digestive tracts from otters (Lutra canadensis) taken by trappers during February, March, and April over a period of 6 years in Wisconsin, Michigan, and Minnesota. In addition, scats of Wisconsin otters from all seasons of the year were examined for food remains. Fish, particularly non-game fish, were the main prey species. Game fish (including trout) occurred infrequently. Crayfish, frogs, and aquatic insects were other important foods.

Mead, Rodney A. AGE DETERMINATION IN THE SPOTTED SKUNK. J. Mammal. 48(4): 606-616, 5 figs. Nov. 1967. WR 129: 33
[Univ. Utah, Salt Lake City.] Abstract: Five indices of age in the spotted skunk were studied. Lens weight is the measurement most useful in distinguishing between juveniles, subadults, and adults. Obliteration of cranial sutures is the next best index in specimens less than 10 to 11 months old. Observations of ankylosis of the epiphysis to the diaphysis of long bones are useful only in separating animals less than 8 months of age from older animals. Placental scars, and weight and shape of the baculum also are useful provided the investigator is aware of the biological factors that influence these structures.

Parks, Eugene. SECOND LITTERS IN THE STRIPED SKUNK. N.Y. Fish & Game J. 14(2): 208-209. July 1967. WR 129: 33
[N.Y. State Conserv. Dept., Albany.] "From the experience and observations recorded during the 1966 breeding season, multiple litters are quite possible for the striped skunk [Mephitis mephitis]. Lactation does not seem to inhibit copulation or pregnancy."

DOGS, WOLVES, FOXES

Dyer, W. G., and D. F. Biberdorf. FREE AND PROTEIN AMINO ACID COMPOSITION OF THE NEMATODE (TOXASCARIS LEONINA) (LINSTOW, 1902) OCCURRING IN THE RED FOX (VULPES VULPES). Bull. Wildl. Disease Assoc. 3(2): 60-61. Apr. 1967. WR 129: 33
[Minot State Coll., Minot, N. Dak.] Abstract: The free and protein amino acids of Toxascaris leonina occurring in the red fox (Vulpes vulpes) were tentatively identified by the method of descending two-dimensional paper chromatography. Lysine, histidine, arginine, glycine, serine, threonine, glutamic acid, alanine, proline, tyrosine, methionine, valine, phenylalanine, and leucine-isoleucine were found in the free amino acid fraction. The protein amino acid fraction revealed cystine, lysine, aspartic acid, histidine, arginine, glycine, serine, threonine, glutamic acid, alanine, proline, tyrosine, methionine, valine, phenylalanine and leucine-isoleucine. The presence of tryptophane was not determined as alkaline hydrolysates were not prepared.

Kairov, I. Kh. [NEW DATA ON THE ROLE OF JACKALS IN THE EPIZOOTOLOGY AND EPIDEMIOLOGY OF HELMINTHIC INFESTATIONS.] Vestn. Karakalpak Filiala Akad. Nauk Uzb. SSR 2(24): 43-44. 1966. [From Biol. Abstr. 48(24), 1967, from Referat. Zhur., Biol., 1967, no. 1K125. Transl. of Russian abstr.] WR 129: 33

Lamina, J., and M. Brack. DER NIERENWURM--DIOCTOPHYME RENALE--(GOEZE, 1782, STILES, 1901) ALS TODESURSACHE BEI EINEM MAEHNENWOLF (CHRYSOCYON JUBATUS). [THE KIDNEY WORM DIOCTOPHYME RENALE (GOEZE, 1782, STILES, 1901) AS A CAUSE OF DEATH IN A MANED WOLF (CHRYSOCYON JUBATUS).] Z. Parasitenk. 27(4): 336-340, illus. 1966. [From Biol. Abstr. 48(1), 1967. In German.] WR 129: 33
[Johann Wolfgang Goethe-Univ., Frankfurt am Main, Germany.]

Pulliainen, Erkki. ON THE DISTRIBUTION AND MIGRATIONS OF THE ARCTIC FOX (ALOPEX LAGOPUS L.) IN FINLAND. Aquilo Ser. Zool. 2: 25-40. 1965. [From Biol. Abstr. 48(21), 1967.] WR 129: 33
[Univ. Helsinki, Helsinki, Finland.]

Shcherbina, E. I. [ECOLOGY OF THE FOX IN KARABIL AND THE OBRUCHEVSK STEPPE (IN SOUTHEASTERN TURKMENIA).] Izvest. Akad. Nauk Turkm. SSR 3: 66-74, illus. 1966. [From Biol. Abstr. 48(20), 1967. In Russian.] WR 129: 34

CATS

Bernard, J. HELMINTHES PARASITES DU CHAT SAUVAGE (FELIS LIBYCA FORSTER) DANS LE CAP BON. [PARASITIC HELMINTHS OF THE WILD CAT (FELIS LIBYCA FORSTER) IN CAPE BON.] Arch. Inst. Pasteur Tunis 41(3-4): 373-384, illus. 1964. [From Biol. Abstr. 48(24), 1967. In French.] WR 129: 34
[École Nat. Supér. Agr., Tunis, Tunisia.]

Kluge, John P. TRICHINOSIS AND SARCOSPORIDIOSIS IN A PUMA. Bull. Wildl. Disease Assoc. 3(3): 110-111, 2 figs. July 1967. WR 129: 34
[Natl. Animal Disease Lab., Ames, Iowa.]

BIG GAME, GENERAL

Beale, Donald M., and Arthur D. Smith. IMMOBILIZATION OF PRONGHORN ANTELOPES WITH SUCCINYLCHOLINE CHLORIDE. J. Wildl. Mgmt. 31(4): 840-842. Oct. 1967. WR 129: 34
[Utah State Univ., Logan.] Abstract: Succinylcholine chloride was administered intramuscularly by Cap-Chur gun to eight pronghorn antelopes (Antilocapra americana). The animals were confined to a 40-acre enclosure which permitted repeated dosage on some animals. Effective doses ranged from 6.05-9.93 mg/100 lb of body weight. No mortality resulted, and no complications were observed. The drug seems an effective immobilant for this species.

Bergerud, Arthur T. MANAGEMENT OF LABRADOR CARIBOU. J. Wildl. Mgmt. 31 (4): 621-642, 10 figs. Oct. 1967. WR 129: 34
[Univ. British Columbia, Vancouver, Canada.] Abstract: Population status, recruitment, and mortality statistics were analyzed for Labrador caribou (Rangifer tarandus) populations from 1958-63 to determine population trends. Two primary herds were recognized, the Mealy Mountain Herd in southern Labrador occupying a region between Paradise River and the south shore of Lake Melville, and the George River Herd situated at the headwaters of the George River in northern Ungava. Census figures for the Mealy Mountain Herd were 2,400 animals in 1958, 1,900 in 1960, and 800 in 1963. March recruitment figures for the Mealy Mountain Herd for 6 years averaged 11%, calves/(calves plus adults). The average annual harvest in the 6-year interim was 539 animals. The mean annual mortality rate was calculated at 30-31% and the mean annual hunting mortality at 26-27%, 1958-63. The annual natural mortality of caribou alive in March was estimated at 6%. Calf mortality from birth to 9 months was calculated at 71%. Closed seasons were recommended for the Mealy Mountain Herd in 1959-60 and thereafter. However, public pressure prevented a closed season except in 1959-60 and 1965-66. Failure to manage the Mealy Mountain Herd on a sustained yield basis resulted from a failure to convince the public that the census figures were reasonably accurate and that the population was declining. The George River Herd was estimated at 15,000 in 1958. March recruitment figures for 6 years were 11%. The annual kill by Labrador residents varied from 600 to 1,100 animals. Evidence from several sources indicated that the herd increased from 1958 to 1963. The decline of Labrador caribou around 1900 is attributed to overhunting. The possibility of pristine population regulation through range overutilization and/or wolf predation is discussed and the latter is favored by the author.

Bromley, Peter T., and Bart W. O'Gara. ORPHANED PRONGHORNS SURVIVE. J. Wildl. Mgmt. 31(4): 843. Oct. 1967. WR 129: 35
[Univ. Mont., Missoula.] Abstract: Two marked sibling pronghorn (Antilocapra americana) kids orphaned in July at age 7 weeks survived at least until the following February. Seven kids were observed grazing actively at 3 to 7 weeks of age. These and other supporting observations indicate that kids may survive their mother's death during a September hunting season.

DESERT BIGHORN COUNCIL 1967 TRANSACTIONS. [iii] + 175 p., illus., photo-offset. 1968. Available at $2.00 from Desert Bighorn Council, 1500 North Decatur Blvd., Las Vegas, Nev. 89108. WR 129: 35
Contains 16 papers, as follows: Results of Nevada's 1965 and 1966-67 bighorn sheep seasons, Larry W. Barngrover; The bighorn sheep hunter indoctrination program in Nevada, Charles G. Hansen; Public domain and Arizona bighorn sheep, Lawrence E. Powell; Some comparisons between the barbary sheep and the desert bighorn, Reginald H. Barrett; Preliminary results of administering drugs to desert bighorn sheep for capture purposes, H. Stevan Logsdon; Reproduction and water utilization of Texas transplanted desert bighorn sheep, Tommy L. Hailey; Status of the bighorn in Death Valley and Joshua Tree National Monuments, Ralph E. Welles; Past and present distribution of the bighorn sheep on the Colorado and Green Rivers in Utah, Lanny O. Wilson. Growth of one bighorn ram 1966-1967, Robert D. Hernbrode, Jr.; Notes concerning current policy affecting bighorn management at Joshua Tree National Monument, William F. Dengler; The future needs in desert bighorn research, Charles G. Hansen; Fifteen years of bighorn sheep hunting in Arizona, John P. Russo; A study of the kidney of Nelson bighorn sheep: A preliminary report, W. Glen Bradley and L. Glenn Allred; Boone and Crockett scores from the Desert Game Range and their significance to management, W. Glen Bradley; Range of variation in Nelson bighorn sheep from the Desert Game Range and its taxonomic significance, W. Glen Bradley and Lee R. Baker; Life tables for Nelson bighorn sheep on the Desert Game Range, W. Glen Bradley and Diane Palmer Baker.

Drozdz, Jan. STUDIES ON HELMINTHS AND HELMINTHIASES IN CERVIDAE. II. THE HELMINTH FAUNA IN CERVIDAE IN POLAND. Acta Parasitol. Pol. 14(1/4): 1-13. 1966. [From Biol. Abstr. 48(4), 1967. In English with Polish summ.] WR 129: 35
[Agr. Univ. Coll., Warsaw, Poland.] Five species of trematodes, 6 species of cestodes and 40 species of nematodes were found in 5 Alces alces, 54 Cervus elaphus, 16 C. nippon, 14 Dama dama and 93 Capreolus capreolus.

Floss, Ludmilla, compiler. REINDEER IN RUSSIA AND THE SCANDINAVIAN COUNTRIES. USDI Dept. Library Bibliog. no. 6. viii + 35 p. Nov. 1967. WR 129: 35
Supersedes the compiler's earlier Bibliography on Reindeer in Russia [WR 124: 31]. Finnish and Scandinavian citations are added as well as more recent Russian references. [Three hundred twenty-eight citations categorized under ten major headings.]

Forrester, Donald J., and E. Midori Wada. AN ATTEMPT TO ISOLATE VIRUSES FROM LUNG TISSUE AND LUNG NEMATODES OF BIGHORN SHEEP. Bull. Wildl. Disease Assoc. 3(2): 74-76, 1 fig. Apr. 1967. WR 129: 35
[Univ. Calif., Davis.] "Ovis c. canadensis."

Foster, J. B. THE SQUARE-LIPPED RHINO (CERATOTHERIUM SIMUM COTTONI (LYDEKKER)) IN UGANDA. East African Wildl. J. 5: 167-170, 1 fig. Aug. 1967. WR 129: 35
[Univ. Coll., Nairobi, Kenya.] Herd size and structure, movements, feeding and management.

Goddard, John. HOME RANGE, BEHAVIOUR, AND RECRUITMENT RATES OF TWO BLACK RHINOCEROS POPULATIONS. East African Wildl. J. 5: 133-150, 1 fig. Aug. 1967. WR 129: 36

[P.O. Box 14, Voi, Kenya.] The results of the studies indicate that the rhinoceros population of the Ngorongoro Conservation Area is considerably higher than was formerly believed. The future of the species in the area appears favorable, providing its habitats are not destroyed through encroaching cultivation.--From summ.

Hanks, J. THE USE OF M.99 FOR THE IMMOBILISATION OF THE DEFASSA WATERBUCK, (KOBUS DEFASSA PENRICEI). East African Wildl. J. 5: 96-105, 2 figs. Aug. 1967. WR 129: 36

[Dept. Game & Fisheries, P.O. Box 1, Chilanga, Zambia.] Summary: Waterbuck were darted with the new "Hypodart" fired from the crossbow, and with the "Cap-Chur" gun. Eleven waterbuck were successfully immobilised with M.99 alone. The remaining 37 received M.99 in conjunction with an ataractic, acetylpromazine maleate. Hyoscine hydrobromide, a parasympatholytic drug, never formed part of the immobilising dose and was given to only five of the immobilised animals. Not only is this drug unnecessary; its use is a positive disadvantage and was responsible for the death of one waterbuck. Three other waterbuck died, two of these probably from heat stroke, a consequence of using acepromzine on a hot day. The remaining animal damaged a leg when trying to get up and was killed by lion five days later. This paper gives justification for combining M.99 and acepromazine in the approximate ratio of 1:1 for the immobilisation of this species, and suggests that the losses experienced by other workers through torticollis may well have been the result of the acepromazine.

Hansen, Charles G. BIGHORN SHEEP POPULATIONS OF THE DESERT GAME RANGE. J. Wildl. Mgmt. 31(4): 693-706, 6 figs. Oct. 1967. WR 129: 36

[Bur. Sport Fisheries & Wildl., Las Vegas, Nev.] Abstract: The population of desert bighorn sheep (Ovis canadensis nelsoni) on the Desert Game Range in Nevada has varied from about 1,000 to 3,000 animals since the early 1930's and now is estimated at 1,200. Studies indicate that about 1,000 of these live on the Sheep Range Management Unit. Lamb to ewe ratios are approximately 70:100 from birth to 1 month of age and 35:100 from 1-6 months of age. The yearling to ewe ratio is about 15:100. Mortality of the bighorn sheep is relatively low after 2 years of age but reaches a peak at about 10-11 years. The oldest animals found were 16 or 17 years of age. Regulated hunters killed 139 rams between 1954 and 1963. Each year the killed rams were progressively younger, averaging 8.9 years to a low of 6.6 years in 1963. During this same period the population sex ratio changed. The ratio of adult rams to ewes varied from about 100:100 in the pristine population before hunting to approximately 23:100 in 1962, 1963, and 1964. The loss of the young animals to hunters and the nature of the population structure suggest that the total population can be reduced by the continued removal of young rams by hunters. Total numbers have actually decreased from about 3,000 in the early 1950's to about 1,200 in the early 1960's. On the Sheep Range Management Unit this reduction appears to consist of a loss of rams without a reciprocal gain in ewes. Also, the removal of young rams by hunters reduces the number of rams that will reach an age when their horns are sought as trophies.

Hawkins, R. E., L. D. Martoglio, and G. G. Montgomery. CANNON-NETTING DEER. J. Wildl. Mgmt. 32(1): 191-195, 2 figs. Jan. 1968. WR 129: 36

[Coop. Wildl. Res. Lab., Carbondale, Ill.] Abstract: A cannon-net was used to capture semitame and wild white-tailed deer (Odocoileus virginianus) on four areas in southern Illinois and wild fallow deer (Dama dama) on one area in southwestern Kentucky. Cannon-nets were fired electrically over prebaited areas in the following ways: (1) waiting for deer to approach the bait site and firing the cannons from a blind or a tree stand; (2) setting an automatic trigger 12-15 inches over the bait; when the trigger was tripped by feeding deer, the cannons fired; and (3) firing the cannons from 200-300 yards away

when deer were at the bait. Forty-nine attempts were made to capture deer with the cannon-net. These attempts proceeded on 18 occasions to firing the cannon; 11 of these firings were successful in trapping deer (26 whitetails and 7 fallows). Twelve of the deer were semitame and 21 were wild. No mortality resulted from use of the cannon-net itself.

Hilgenfeld, M. GLOBIDIOSE BEI SIBIRISCHEN STEINBOCKEN (CAPRA SIBIRICA). [GLOBIDIOSIS IN SIBERIAN ANTELOPES (CAPRA SIBIRICA).] Kleintier-Praxis 11(2): 46-48, illus. 1966. [From Biol. Abstr. 48(1), 1967. In German.] WR 129: 37
[Inst. Vergleichende Pathol., Deut. Akad. Wiss., Berlin, Germany.]

Ishunin, G. I. [DEER CERVUS ELAPHUS BACTRIANUS IN THE SOUTHERN UZBEKISTAN (USSR).] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 72(1): 136-138. 1967. [From Biol. Abstr. 48(24), 1967. In Russian.] WR 129: 37
[Akad. Sci. Uzb., Tashkent, USSR.]

Keymer, I. F. STUDIES ON PLASMODIUM (VINCKEIA) CEPHALOPHI OF THE GREY DUIKER (SYLVICAPRA GRIMMIA). Ann. Trop. Med. Parasitol. 60(2): 129-138, illus. 1966. [From Biol. Abstr. 48(20), 1967.] WR 129: 37
[Zool. Soc. London, London, England.]

Lamprey, H. F., P. E. Glover, M. I. M. Turner, and R. H. V. Bell. INVASION OF THE SERENGETI NATIONAL PARK BY ELEPHANTS. East African Wildl. J. 5: 151-166, 5 figs. Aug. 1967. WR 129: 37
[Serengeti Res. Inst., P.O. Box 3134, Arusha, Tanzania.] Summary: Elephants were first recorded in the Serengeti in 1955 and were probably absent for at least the previous 40 years. Elephant numbers have increased, mainly through immigration, to their present level of approximately 2,000 and have remained at this level for the last three years. Vegetation changes caused by elephants in the Serengeti include the destruction of the larger trees at the rate of at least 6% per year. Recovery of the woodlands from the effects of elephants is retarded by the inhibiting effects of bush fires on the regeneration of young trees. The policy and management implications of the elephant invasion are discussed.

Lavov, M. A. [DISTRIBUTION AND POPULATION DENSITY OF WILD UNGULATES IN EAST SIBERIA.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(5): 30-39. 1966. [From Biol. Abstr. 48(22), 1967. In Russian.] WR 129: 37

Laws, R. M. EYE LENS WEIGHT AND AGE IN AFRICAN ELEPHANTS. East African Wildl. J. 5: 46-52, 4 figs. Aug. 1967. WR 129: 37
[Tsavo Res. Project, P.O. Box 14, Voi, Kenya.] Summary: Eye lens dry-weights have been determined for 543 African elephants from three populations in East Africa. When plotted against estimated ages based on tooth replacement and wear criteria they indicate growth curves with rapid initial growth in lens weight, succeeded by a phase of rectilinear growth which apparently persists throughout life. Parameters for the regressions of lens dry weight on age have been calculated by sex and locality. Confidence limits are fitted and no significant difference in the growth rates can be demonstrated, except for a sex difference in the values for the *a* intercept. Variability at age is slightly greater in males than females, but is little greater than is indicated by studies on other species using known-age animals. This is taken to confirm the accuracy of the age criteria adopted and leads to conclusions on their precision. It is suggested that this method might provide an objective check on the accuracy and precision of age estimates in other species.

Laws, R. M., I. S. C. Parker, and A. L. Archer. ESTIMATING LIVE WEIGHTS OF ELEPHANTS FROM HIND LEG WEIGHTS. East African Wildl. J. 5: 106-111, 4 figs. Aug. 1967. WR 129: 37
[Tsavo Res. Project, P.O. Box 14, Voi, Kenya.] Summary: A correlation between dissected hind leg weight and live weight is demonstrated for 38 African elephants. Calculated regressions are presented for adult males and for females and immature males. Considered as a percentage of live weight, hind leg weight varies between 5.3 and 6.3% according to live weight, and can be used to predict live weight accurately.

Markgren, Gunnar. OM RADJUREN (CAPREOLUS CAPREOLUS) I NORDSVERIGE OCH DERAS VINTEREKOLOGI. [ON THE WINTER ECOLOGY OF THE ROE DEER (CAPREOLUS CAPREOLUS) IN NORTHERN SWEDEN.] Zool. Revy 28(4): 97-107, illus. 1966. [From Biol. Abstr. 48(22), 1967. In Swedish with English summ.] WR 129: 38

Nilsson, O., M. Nordkvist, and L. Ryden. EXPERIMENTAL BABESIA DIVERGENS INFECTION IN REINDEER (RANGIFER TARANDUS). Acta Veterinaria Scand. 6(4): 353-359, illus. 1965. [From Biol. Abstr. 48(9), 1967. In English with German and Swedish summ.] WR 129: 38
[Nat. Veterinary Inst., Stockholm, Sweden.]

Pettersson, J. O. [ELK HUNTING, ELK PRESERVATION, ELK-CAUSED DAMAGES.] Deut. Akad. Landwirtschaftswiss. Tagungsber. 78: 67-70. Jan. 1965. [From Bibliog. Agr. 31(10), 1967. In German.] WR 129: 38
"In Swedish forests."

Roff, C. DEER IN QUEENSLAND. Queensland J. Agr. Sci. 17(1): 43-58, 14 figs. Mar. 1960. WR 129: 38
Summary: Fallow deer, Cervus dama L., axis or chital deer, C. axis Erxleben, red deer, C. elaphus L., and rusa deer, C. unicolor Kerr, are present in Queensland, and under fauna conservation legislation are protected. Results of the first survey since deer were introduced over 80 years ago indicate that present populations and distributions of the fallow, axis and rusa deer do not warrant and would not support a policy of open season hunting. Red deer offer possibilities in this regard, but before implementation could be considered, well defined and adequately staffed management areas would be required.

Scotter, George W. EFFECTS OF FIRE ON BARREN-GROUND CARIBOU AND THEIR FOREST HABITAT IN NORTHERN CANADA. Trans. 32nd N. Am Wildl. & Nat. Resources Conf. p. 246-259, 1 fig. 1967. WR 129: 38
[Utah State Univ., Logan.] In considering only two big-game species, fire appears to reduce the quantity of winter range for barren-ground caribou and improve it for moose on upland forests of the study areas. Based on the pellet group data collected during this study, the biomass of caribou per acre of mature forest appears higher than that of moose on early subclimax forests on upland sites. Thus in terms of meat production, the upland forests may be best suited to barren-ground caribou use.--From concl.

Simpson, C. David. REPRODUCTION AND POPULATION STRUCTURE IN GREATER KUDU IN RHODESIA. J. Wildl. Mgmt. 32(1): 149-161, 10 figs. Jan. 1968. WR 129: 38
[Univ. Mo., Columbia.] Abstract: Data from 289 greater kudu (Tragelaphus strepsiceros), shot during tsetse control game elimination in Rhodesia, established some facts about the biology of this species. Reproductive data are analyzed to give age-specific birth rates, which show productivity to peak in middle-aged females, and to give the status each month of pregnant, lactating, and non-breeding animals. The breeding season is restricted, calves being born in February-March, and lactation lasts about 6 months, ceasing shortly after the rut in July. The variation in hunter success is associated with the availability of kudu, influenced by the seasonal vertical movements of animals in the study area; altitudinal change is more marked in females. Despite apparent sexual parity at birth, a disparity in favor of males was found among subadults, and became more pronounced with age. The average herd size for each month relates to the seasonal biology of kudu, and the two periods of herd aggregation coincide with the calving and rut seasons.

Soltys, M. A., C. E. Andress, and A. L. Fletch. JOHNE'S DISEASE IN A MOOSE (ALCES ALCES). Bull. Wildl. Disease Assoc. 3(4): 183-184. Oct. 1967. WR 129: 38
[Univ. Guelph, Guelph, Canada.]

Spinage, C. A. AGEING THE UGANDA DEFASSA WATERBUCK KOBUS DEFASSA UGANDAE NEUMANN. East African Wildl. J. 5: 1-17, 9 figs. Aug. 1967. WR 129: 39
[The Bungalow, Steventon Rd., East Hanney, Wantage, Berkshire, England.] Summary: Chronological ages have been assigned to the defassa waterbuck of western Uganda using four complementary techniques. These are the "jaw board" method in which collected skulls are sorted into arbitrary groups based upon tooth eruption and attrition; tooth impressions taken from immobilised animals at yearly intervals; counting of cementum lines in sectioned incisor teeth, and growth of horns in young males. Using these methods an animal could be aged to within plus or minus six months.

Strandgaard, H. RELIABILITY OF THE PETERSEN METHOD TESTED ON A ROE-DEER POPULATION. J. Wildl. Mgmt. 31(4): 643-651, 2 figs. Oct. 1967. WR 129: 39
[Game Biol. Sta., Kalø, Rønde, Denmark.] Abstract: Since 1956 the roe deer (Capreolus capreolus) at the Danish Game Biology Station have been marked with leather collars with serial numbers and colored buttons. In 1966 the collars were fitted with large reflecting numbers, making it possible to recognize individuals in the field, by day as well as by night, at distances up to 300 m. Seventy animals were so marked during the 1966 season. In the period just after the marking season, 1,735 observations were made of roe deer of which 1,336 were of animals individually marked. On this basis the calculation of the population was carried out, and the Petersen estimate, based on sight records of marked and unmarked deer, is evaluated in a situation in which considerable background data exist. Specifically, analyses are made as though individual identification were not obtained, and then individual identifications are used in evaluating the estimates. In this case it is found that more than two-thirds of the population must be captured and marked to obtain a reliable measure of population size.

Thomas, Jack Ward, Richard M. Robinson, and R. G. Marburger. USE OF DIAZEPAM IN THE CAPTURE AND HANDLING OF CERVIDS. J. Wildl. Mgmt. 31(4): 686-692, 2 figs. Oct. 1967. WR 129: 39
[NE Forest Expt. Sta., Morgantown, W. Va.] Abstract: Thirty-eight captive white-tailed deer (Odocoileus virginianus) were given oral doses of diazepam (Tranimul) ranging from 1 to 26 trials per animal over a period of 1 to 12 months. Dosage levels of 15.4 to 22.0 mg/kg of body weight gave maximum tranquilization and incoordination without completely incapacitating the deer. Diazepam made it possible to hold wild deer in close captivity and facilitated handling both wild and tame deer. In five field trials diazepam resulted in the capture of 105 deer of six species including white-tailed deer, mule deer (Odocoileus hemionus), axis deer (Axis axis), sika deer (Cervus nippon), fallow deer (Dama dama), and sambar deer (Cervus unicolor). Two axis deer died as a result of trauma during capture; one died as a result of acute bloat, and one died from pneumonia. This represented 3.7% mortality.

Threlfall, William. PARASITES OF MOOSE (ALCES ALCES) IN NEWFOUNDLAND. J. Mammal. 48(4): 668-669. Nov. 1967. WR 129: 39
[Memorial Univ. Newfoundland, St. John's.]

Todd, K. S., Jr., D. M. Hammond, and B. W. O'Gara. REDESCRIPTION AND INCIDENCE OF EIMERIA ANTELOCAPRAE HUIZINGA, 1942 IN THE PRONGHORN ANTELOPE, ANTILOCAPRA AMERICANA (ORD, 1815). Bull. Wildl. Disease Assoc. 3(2): 71-73, 1 fig. Apr. 1967. WR 129: 39
[Utah State Univ., Logan.]

Wilson, V. J., and H. H. Roth. THE EFFECTS OF TSETSE CONTROL OPERATIONS ON COMMON DUIKER IN EASTERN ZAMBIA. East African Wildl. J. 5: 53-64, 3 figs. Aug. 1967. WR 129: 39
[P.O. Box 240, Bulawayo, Rhodesia.] Summary: The effects of intensive Tsetse Control hunting operations on a duiker population (Sylvicapra grimmia) were investigated in a 200 sq. mile area in Eastern Zambia. Two years of hunting were insufficient to reduce this population so significantly that a

marked shift of its age composition towards the juvenile age classes resulted. There were, however, indications of beginning accelerated population growth through increased breeding and inclusion of more juveniles in the reproduction process, as a first response to the hunting pressure. Although general availability of duiker did not diminish, they became increasingly difficult to shoot because of behavioural adaptation and changing periods of feeding activity. Neither hunting nor various other human disturbances provoked emigration from the area or a change of the seasonal pattern of localised movement. The studied hunting operation failed to remove more than the annual increment to the duiker population and in respect of this species was thus ineffective as a means of Tsetse Control. Implications of the results of this study for the management of duiker for sustained meat production are discussed.

Yazan, Yu. P. [ELK (ALCES ALCES) IN THE NORTHERN CAUCASUS.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(4): 123-125. 1966. [From Biol. Abstr. 48 (20), 1967. In Russian.] WR 129: 40

DEER (Odocoileus)

Allen, Eugene O. RANGE USE, FOODS, CONDITION, AND PRODUCTIVITY OF WHITE-TAILED DEER IN MONTANA. J. Wildl. Mgmt. 32(1): 130-141, 3 figs. Jan. 1968. WR 129: 40

[Mont. Fish & Game Dept., Bozeman.] Abstract: This study of the ecology and condition of white-tailed deer (Odocoileus virginianus) was conducted on Missouri River bottomlands in northcentral Montana from June, 1964, to June, 1965. Range use was evaluated from 4,647 field observations of whitetails. Forty and 33 percent of summer observations, and 22 and 35 percent of fall observations, were made in the meadow vegetation type and alfalfa fields respectively. Fifty percent of winter and 19 percent of spring observations were in the cottonwood type. The weed type accounted for 26 and 53 percent of winter and spring observations, respectively. Food habits were evaluated from analyses of 48 rumen samples and examination of 57 feeding sites. Browse averaged 45, 81, 65, and 43 percent of the contents of rumen samples for summer, fall, winter, and spring, respectively. Forbs averaged 54, 17, 29, and 18 percent for the same seasons. Grass was present in rumen samples during all seasons but was a minor item except in spring when its volume averaged 38 percent. Western snowberry (Symphoricarpos occidentalis), with values of 95 and 27 percent, respectively, for frequency and average volume of all rumen samples, was the most important food plant. Volume of snowberry decreased from 60 to 1 percent and volume of kochia (Kochia scoparia), increased from 6 to 41 percent from early to late winter. Poor physical condition of the deer suggested this change was due to range depletion. Classification of 188 whitetails in December showed a low fawn/doe ratio of 16 to 100, but 12 pregnant females examined December to June averaged two fetuses each. Minor use of bottomlands mule deer (Odocoileus hemionus) and elk (Cervus canadensis), especially during winter and spring, precluded significant competition with whitetails. There was severe overlapping use of browse by cattle and whitetails during winter, as indicated by utilization of plants along transects.

Bauer, Richard D., Jerome T. Light, Jr., and William R. Thornton. DETERMINATION OF THE WINTER RANGE OF A BLACK-TAILED DEER HERD IN THE NORTH COAST RANGE OF CALIFORNIA. Calif. Fish & Game 54(1): 27-32, 1 fig. Jan. 1968. WR 129: 40

[Bur. Sport Fisheries & Wildl., Willows, Calif.] Abstract: The winter ranges for deer (Odocoileus hemionus columbianus) summering in the Black Butte-Ford Hill area in the North Coast Range of California were determined by the marking of 47 deer in the summer of 1962. Hardin Hole Ridge and the Euchre Glade area were the principal winter ranges. Migration distances ranged from 4 to 12 air miles. The knowledge obtained from this study is presently being used to manage this deer herd.

Cook, R. S., M. White, D. O. Trainer, and W. C. Glazener. RADIOTELEMETRY FOR FAWN MORTALITY STUDIES. Bull. Wildl. Disease Assoc. 3(4): 160-165, 1 fig. Oct. 1967. WR 129: 41

[Univ. Wis.-Green Bay, Green Bay.] Abstract: To establish some of the factors responsible for neonatal fawn mortality in a white-tailed deer (Odocoileus virginianus) population on the Welder Wildlife Refuge in South Texas, radio transmitters, constructed as collars, were placed on 34 and 47 fawns, 1 to 12 days of age, during 1965 and 1966, respectively. The collared fawns were relocated almost daily with a receiver and a directional antenna for a minimum of a month, or until death. Frequent relocation of collared fawns allowed observation of their physical condition and provided fresh carcasses enabling determination of the causes of death. In addition, it was possible to measure movements and study behavior during this normally inaccessible period. Radiotelemetry techniques and problems encountered during the study are discussed. The utility of radiotelemetry in studies of juvenile mortality, movement, and behavior was amply demonstrated.

Davis, Lawrence S. DYNAMIC PROGRAMMING FOR DEER MANAGEMENT PLANNING. J. Wildl. Mgmt. 31(4): 667-679, 1 fig. Oct. 1967. WR 129: 41

[Va. Polytech. Inst., Blacksburg.] Abstract: Deer herd management has many attributes in common with the general economic problem of resource allocation for land management. A mathematical model for any specified deer herd, ecological environment, and management resource situation on a given land tract was constructed as a dynamic linear programming problem for computer analysis. The results of these analyses were found to conform reasonably well with the general behavior of actual deer populations and provided considerable planning information for the deer manager such as estimates of the optimum size and structure of the annual harvest and leave herd. By varying the coefficients of mortality, productivity, and values for harvested deer, the sensitivity of management programs to these factors was indicated. Timber production was introduced as a specific management alternative and the problems of joint timber and game management were studied. One result was a method for imputing the minimum value of harvested deer required to justify deer management on different timber sites.

Debbie, John G. CHLAMYDIA (PSITTACOSIS) ANTIBODY STUDY IN WHITE-TAILED DEER. Bull. Wildl. Disease Assoc. 3(4): 152-155. Oct. 1967. WR 129: 41

[N.Y. State Dept. Health, Albany.] Abstract: Deer sera collected during special post-season hunts were tested for group antibody to Chlamydia (psittacosis-human pneumonitis) antigen by the complement-fixation test. The deer came from one area in Quebec Province and two areas of New York State. Over 50% had complement-fixation titres greater than 1 to 16. Results of these tests are given along with a discussion of their probable implications in wildlife and human health.

Debbie, J. G., and M. Friend. LYMPHOSARCOMA IN A WHITE-TAILED DEER. Bull. Wildl. Disease Assoc. 3(1): 38-39, 3 figs. Jan. 1967. WR 129: 41

[N.Y. State Dept. Health, Albany.]

Dennett, Dan, Jr. SOME FACTS AND FIGURES ABOUT THE 1966-67 DEER SEASON. La. Conservationist 19(9&10): 14-15, 1 fig. Sept.-Oct. 1967. WR 129: 41

Total legal kill was 32,501 deer of which one in eleven was a doe.

Fisher, F. P. ACCIDENTAL CHOKE IN WHITE-TAILED DEER. Bull. Wildl. Disease Assoc. 3(4): 184. Oct. 1967. WR 129: 41

[2357 Burdette Dr., Niagara Falls, Ontario, Canada.]

Friend, Milton. SKIN TUMORS IN NEW YORK DEER. Bull. Wildl. Disease Assoc. 3(3): 102-104. July 1967. WR 129: 42
[N.Y. State Conserv. Dept., Albany.] Abstract: Examination of 2,440 deer in the Catskill Region and 609 in the Adirondack Region revealed skin tumor prevalence of 1.4% and 1.3% respectively. A total of 37 or 88.1% of the infected deer from these two areas were males. Infections involving five or less small tumors were most frequently encountered.

Friend, M., and L. G. Halterman. SEROLOGIC SURVEY OF TWO DEER HERDS IN NEW YORK STATE. Bull. Wildl. Disease Assoc. 3(1): 32-34. Jan. 1967. WR 129: 42
[N.Y. State Conserv. Dept., Albany.]

Friend, Milton, and C. W. Severinghaus. INFLUENCE OF NUTRITION ON EYE-LENS WEIGHT IN DEER. N.Y. Fish & Game J. 14(2): 166-175, 1 fig. July 1967. WR 129: 42
[N.Y. State Conserv. Dept., Albany.] Abstract: Eye-lens weights for deer taken during January on three wintering areas in New York were compared. Range conditions were considered good on two of the areas but poor on the other. Lens weights for the two areas of good range were similar, but those for all age groups sampled on the area of poor range were significantly lower. Studies of laboratory rats from well nourished mothers have shown that growth in body weight after the age of weaning can be completely suppressed by underfeeding for considerable periods with no retardation in eye-lens growth. Therefore, it seems probable that the differences recorded for wild deer were the result of nutritional deficiencies that affected lens growth of fawns during their fetal period or prior to weaning. Thus, they are considered to reflect differences in range quality.

Karstad, Lars. FLUOROSIS IN DEER (ODOCOILEUS VIRGINIANUS). Bull. Wildl. Disease Assoc. 3(2): 42-46, 2 figs. Apr. 1967. WR 129: 42
[Ontario Vet. Coll., Guelph, Canada.] Abstract: Above normal levels of fluorides were found in the bones of deer in the vicinity of an industrial complex. The sources of fluorides for the deer were water in a pond within the industrial compound and vegetation containing moderately increased levels of fluoride. Mandibular bone fluoride contents of 4300 to 7125 ppm. were associated with pitting and black discoloration of teeth, abnormal tooth wear and fractures of teeth and jaw bones.

Kitchen, Hyram, Frank W. Putnam, and W. Jape Taylor. HEMOGLOBIN POLYMORPHISM: ITS RELATION TO SICKLING OF ERYTHROCYTES IN WHITE-TAILED DEER. Science 144(3623): 1237-1239, 4 figs. 5 June 1964. WR 129: 42
[Univ. Fla., Gainesville.] Abstract: Hemoglobins with different electrophoretic mobilities are associated with bizarre shapes seen during ordinary light microscopy of erythrocytes from the white-tailed deer, Odocoileus virginianus; nonsickling is contingent upon a specific hemoglobin. Sickling in vitro, which is produced to a maximum degree in the presence of oxygen and elevated pH, is not associated with hematological abnormalities or disease despite marked differences in physical characteristics of sickled and nonsickled cells.

Kitchen, Hyram, Frank W. Putnam, and W. Jape Taylor. THE STRUCTURAL BASIS FOR THE POLYMORPHIC HEMOGLOBINS OF WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS): A COMPARISON OF THE HEMOGLOBINS ASSOCIATED WITH SICKLED AND NONSICKLED ERYTHROCYTES. Intern. Symposium Comp. Hemoglobin Structure (Thessaloniki) 11-13 Apr. 1966. p. 73-82, 8 figs. [1966]. WR 129: 42
[Univ. Fla., Gainesville.]

Kuttler, K. L., R. M. Robinson, and R. R. Bell. TICK TRANSMISSION OF THEILERIASIS IN A WHITE-TAILED DEER. Bull. Wildl. Disease Assoc. 3(4): 182-183. Oct. 1967. WR 129: 43
[Texas A & M Univ., College Station.]

Kuttler, K. L., R. M. Robinson, and W. P. Rogers. THE DETECTION OF SPECIFIC COMPLEMENT-FIXING ANTIBODIES IN SERUM OF WHITE-TAILED DEER (ODOCOILBUS VIRGINIANUS) WITH THEILERIA INFECTION. Canadian J. Comp. Med. & Vet. Sci. 31(12): 354-357, 2 figs. Dec. 1967. WR 129: 43
Summary: A complement-fixation (CF) antigen which has been prepared from Theileria infected erythrocytes is capable of reacting to specific serum antibodies of deer acutely infected with Theileria. No sera from 17 deer known to be free of Theileria infection reacted positively to the CF test. Of 35 tests on sera from 12 infected deer having a parasitemia of 2% or less and no accompanying anemia, only 10 (29%) were positive, 2 (6%) were suspicious, and 23 (66%) were negative. Of 65 tests on 8 acutely infected deer, 49 (75%) were positive, 4 (6%) were suspicious and 12 (18%) were negative. Of the 8 deer in which acute theileriasis occurred all reacted to Theileria antigen at one time or another. A significant correlation was found between CF titers and the degree of parasitemia in acute infections. Rabbits were hyperimmunized using erythrocytes from either normal or Theileria infected deer. Reciprocal absorption of the hyperimmune sera with Theileria and normal erythrocytic antigens demonstrated the presence of antibodies specific for Theileria.

Kuttler, K. L., R. M. Robinson, and W. P. Rogers. EXACERBATION OF LATENT ERYTHROCYTIC INFECTIONS IN DEER FOLLOWING SPLENECTOMY. Canadian J. Comp. Med. & Vet. Sci. 31(12): 317-319. Dec. 1967. WR 129: 43
Summary: Eight adult deer and 4 fawns, from wild populations, were splenectomized and observed for evidence of hemo-parasitic relapses. The animals were maintained indoors under tick-free conditions and in the absence of known arthropod vectors. Following splenectomy 2 adult deer and 2 fawns developed acute Eperythrozoon infections, 3 adult deer developed acute Theileria infections, 2 adult deer developed a demonstrable Anaplasma marginale parasitemia, and 1 adult deer exhibited a low level parasitemia of a plasmodial-like intraerythrocytic parasite. The remaining deer failed to develop a parasitemia following splenectomy. In absence of a specific parasitemia no drop occurred in packed cell volume following splenectomy.

Lewis, James C., and Larry E. Safley. THE CENTRAL PENINSULA DEER HERD, 1950-1966: SOME POPULATION CHARACTERISTICS. Tenn. Game & Fish Comm. 19 p., 9 figs. [1967]. WR 129: 43
[Okla. Coop. Wildl. Res. Unit, Stillwater.] During the study period the deer population increased from 800 deer in 1950 to a peak of 5000 in 1957, declined to a low of 1320 in 1961 and increased to 2730 in 1966.

Marburger, R. G., R. M. Robinson, and J. W. Thomas. GENITAL HYPOPLASIA OF WHITE-TAILED DEER. J. Mammal. 48(4): 674-676, 2 figs. Nov. 1967. WR 129: 43
[Texas Parks & Wildl. Dept., Kerrville.]

Mautz, William W., and George A. Petrides. THE USEFULNESS OF CHROMIUM-51 IN DIGESTIVE STUDIES OF THE WHITE-TAILED DEER. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 420-429, 3 figs. 1967. WR 129: 43
[Mich. State Univ., East Lansing.] Summary: A technique of using the radioactive isotope Cr-51 in the study of digestive characteristics was developed for white-tailed deer. Labeling foods with a constant level of Cr-51 for two successive days and collecting fecal samples by an automated feces-collection device on these and one additional day permitted determination of the degree to which the food was digested and the length of time required for that digestion. Feeding only a single dose of the isotope allowed the determination in two days of passage rate data. Most of the labor and unpleasantness of fecal analysis for an indicator was eliminated when using Cr-51. The Cr-51 ratio method yielded similar but less variable digestibility coefficients than the conventional total-collection method. Some digestive characteristics for the white-tailed deer are given.

McCrum, M. W., W. C. Eveland, T. F. Wetzler, and A. B. Cowan. LISTERIA MONOCYTOGENES IN THE FECES OF WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS). Bull. Wildl. Disease Assoc. 3(3): 98-101. July 1967. WR 129: 44

[Wash. State Health Dept. Lab., Seattle.] Abstract: Five of 32 apparently healthy deer, Odocoileus virginianus, were shown to harbor L. monocytogenes in their alimentary tracts. Cultural, biochemical, serologic and virulence characterizations of the five fecal isolates of L. monocytogenes are presented. It is believed that these isolates are the first described from the alimentary tract of apparently normal deer. Two deer harbored serotype I strains of L. monocytogenes, the other three yielded serotype IV strains.

Miller, Frank L. IMMOBILIZATION OF FREE-RANGING BLACK-TAILED DEER WITH SUCCINYLCHOLINE CHLORIDE. J. Wildl. Mgmt. 32(1): 195-197. Jan. 1968. WR 129: 44

[Canadian Wildl. Serv., 293 Albert St., Ottawa 4, Ontario, Canada.] Abstract: From June 21 to November 21, 1963, 40 black-tailed deer (Odocoileus hemionus columbianus) on the Tillamook Burn, Oregon, were immobilized with succinylcholine chloride injected by automatic projectile syringes fired from a CO_2 Cap-Chur rifle. Four deer were killed by the drug. The effective range of dosages for black-tailed deer was 0.07-0.14 mg/lb.

Miller, Frank L. OBSERVED USE OF FORAGE AND PLANT COMMUNITIES BY BLACK-TAILED DEER. J. Wildl. Mgmt. 32(1): 142-148, 2 figs. Jan. 1968. WR 129: 44

[Canadian Wildl. Serv., 293 Albert St., Ottawa 4, Ontario, Canada.] Abstract: During 1964, 6,746 observations were made of known numbers of black-tailed deer (Odocoileus hemionus columbianus) within an enclosure on the Cedar Creek watershed within the Tillamook Burn, Oregon. These observations provide a basis of insight into the deer's use of vegetation within the enclosure. The interpretation centers around feeding and bedding behavior in relation to forage availability and plant communities. Indices of preference by deer for plant communities showed a spatial and seasonal nonrandom distribution of deer. Red huckleberry (Vaccinium parvifolium) was the principal browse plant; vine maple (Acer circinatum) and red alder (Alnus rubra) were unimportant as browse. Browsing of Douglas fir (Pseudotsuga menziesii) began with the first snow. Sightings of deer in the vine maple (Acer circinatum/Polystichum munitum) community were high every month. Deer presence in the huckleberry (Vaccinium parvifolium/Gaultheria shallon) community increased in late winter, peaked in May, and declined the rest of the year. In the big-leafed maple (Acer macrophyllum/Symphoricarpos mollis) community, deer sightings increased in late winter, declined in March and April, increased during the summer, and peaked in October. Relatively few deer were observed in the bracken fern (Pteridium aquilinum/Lotus crassifolius) and thimbleberry (Rubus parviflorus/Trientalis latifolia) communities. Occurrence of deer in the alder (Alnus rubra/Rubus parviflorus) community was highest in spring and fall.

Moen, Aaron Nathan. FACTORS AFFECTING THE ENERGY EXCHANGE AND MOVEMENTS OF WHITE-TAILED DEER, WESTERN MINNESOTA. Ph.D. thesis, Univ. Minn. 128 p. 1966. [From abstr. in Dissertation Abstr. 28(1B), 1967.] WR 129: 44

An analysis of the energy exchange of white-tailed deer (Odocoileus virginianus) in winter habitats located on the border between the prairie and deciduous forest biomes is presented. Two sources of energy are considered, including metabolic heat production, estimated from the literature on deer and sheep, and thermal radiation flux, measured in the field in four different cover types. Four sources of heat loss are considered. Radiation from an animal simulator is measured remotely with a radiometer sensitive to thermal radiation, and these measurements are used as a basis for calculating radiation loss from the whole animal. Convective heat loss is calculated from surface temperature of the animal simulator and heat transfer values from the literature. Heat loss from evaporation and due to warming ingested food is estimated from data in the literature describing similar losses from sheep. Energy exchange graphs are developed for combinations of weather parameters, including air temperatures from 0° to -40° C. and wind velocities from 0.5 to 12 miles per hour.

Moen, Aaron N. HYPOTHERMIA OBSERVED IN WATER-CHILLED DEER. J. Mammal. 48 (4): 655-656, 1 fig. Nov. 1967. WR 129: 45
[Cornell Univ., Ithaca, N.Y.]

Noyes, Ward D., Hyram Kitchen, and W. Jape Taylor. RED CELL LIFE SPAN OF WHITE-TAILED DEER ODOCOILEUS VIRGINIANUS. Comp. Biochem. Physiol. 19: 471-473, 1 fig. 1966. WR 129: 45
[Univ. Fla., Gainesville.] Abstract: 1. The red cell survival of white-tailed deer as measured with DFP is similar to that seen in the sheep and human, with destruction by senescence after a period of approximately 125 days. 2. Under the environmental conditions of our experiment, there did not appear to be any delecterious effect on red cell survival due to variation in hemoglobin type or the ability of cells to sickle. 3. Red cell survival in a guanaco was estimated to be 227 days, in an elk 149 days, in an aoudad 99 days, and in two sika deer, 149 and 159 days respectively.

Peabody, Bill. TWO SEASONS--4,000 DEER. Kans. Fish & Game 24(4): 3-5, illus. Autumn 1967. WR 129: 45
"Hunter success in 1966 was 37 percent with 5,806 permittees harvesting 2,139 deer. Whitetails comprised 75 percent of the kill with 1,608 carcasses ending up in the freezer. A total of 531 mule deer was harvested as compared to 514 in 1965." Bowhunters harvested 164 deer in 1965 and 376 in 1966. Deer mortalities on highways amounted to approximately 560 both years.

Pritchard, W. R., T. D. Malewitz, and Hyram Kitchen. STUDIES ON THE MECHANISM OF SICKLING OF DEER ERYTHROCYTES. Exptl. & Molecular Pathol. 2(2): 173-182, 6 figs. Apr. 1963. WR 129: 45
[Univ. Fla., Gainesville.]

Richens, Voit B. CHARACTERISTICS OF MULE DEER HERDS AND THEIR RANGE IN NORTHEASTERN UTAH. J. Wildl. Mgmt. 31(4): 651-666, 5 figs. Oct. 1967. WR 129: 45
[Bur. Sport Fisheries & Wildl., Box C, Davis, Calif.] Abstract: Mule deer (Odocoileus hemionus) which winter in Daggett County, Utah, are divided by the Uinta-Mountain crest into two distinct herds when on their summer ranges; migration routes and, in large part, winter ranges are also separate. The time, rate, and extent of migration vary from year to year as environmental conditions vary. During 1959-60, big sagebrush (Artemisia tridentata) and mountain mahogany (Cercocarpus sp.) were the key mule deer foods on the winter range, but bitterbrush (Purshia tridentata), serviceberry (Amelanchier sp.), forbs, and grasses were important supplemental foods. Utah juniper (Juniperus osteosperma) and pinyon pine (Pinus edulis) were important as emergency foods and escape cover. The Daggett deer winter range was heavily used by large numbers of big game and domestic livestock; preferred browse species were severely hedged or highlined wherever accessible and there was a low rate of seedling establishment. Predation, starvation, accidents, parasites, and disease contributed to deer mortality during the study period but losses were not large, mostly fawns and older deer with poor teeth. In December and January of 1958-59, there were 85 fawns and 42 bucks per 100 does; the next year there were 80 fawns and 42 bucks per 100 does. Net productivity during the study period was about 31%. Most deer were fat in the fall and gradually lost body condition as spring approached.

Samuel, William M. PARASITES OF PENNSYLVANIA DEER. Pa. Game News 38(11): 25-27, 2 figs. Nov. 1967. WR 129: 45
The 16 species of parasites recovered and their location in the host are tabulated.

Shope, Robert E. THE EPIZOOTIOLOGY OF EPIZOOTIC HEMORRHAGIC DISEASE OF DEER. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 381-386. 1967. WR 129: 45
[Yale Univ., New Haven, Conn.]

Sikes, Dennis, Frank A. Hayes, and Annie K. Prestwood. STAPHYLOCOCCAL ARTHRITIS IN A WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS). Canadian J. Comp. Med. & Vet. Sci. 32(1): 388-391, 8 figs. Jan. 1968. WR 129: 46
[Univ. Ga., Athens.] Summary: A five and one-half year old deer (Odocoileus virginianus) developed an ankylosing periarticular hypertrophic arthritis due to a coagulase positive staphylococcus infection. Complete encasement of the tibio-tarsal (hock) joints with a hypertrophic, and porous osseous mass had occurred with complete loss of articular cartilage. The pathologic alterations of the tissues are compared to those occurring in swine due to Erysipelothrix insidiosa infection which produces a rheumatoid-like arthritis.

Tueller, P. T. NEVADA DEER RANGES; ANNUAL FORAGE PRODUCTION, LIVESTOCK COMPETITION, FEED PREFERENCES AND RANGE IMPROVEMENT PRACTICES INFLUENCE OUR BIG GAME HABITAT. Nev. Ranch Home Rev. 3(4): 6-7. Winter 1966. [From Bibliog. Agr. 31(10), 1967.] WR 129: 46

Ullrey, D. E., W. G. Youatt, H. E. Johnson, L. D. Fay, and B. L. Bradley. PROTEIN REQUIREMENT OF WHITE-TAILED DEER FAWNS. J. Wildl. Mgmt. 31(4): 679-685. Oct. 1967. WR 129: 46
[Mich. State Univ., East Lansing.] Abstract: Forty-five white-tailed deer fawns (Odocoileus virginianus), 3 to 5 months old, were weaned and adjusted to a complete pelleted diet. They were then assigned at random to one of three dietary protein levels, from sex and weight outcome groups, for a period of 98 days. Female fawns receiving 12.7% crude protein gained significantly (P is less than 0.05) faster than those receiving 7.8% crude protein, and did not differ from those receiving 20.2% crude protein. Male fawns receiving 20.2% crude protein gained significantly (P is less than 0.01) faster than those receiving either 12.7 or 7.8%. Males gained at the same rate as females on the two lower levels of protein but significantly (P is less than 0.01) faster on the highest level. Feed efficiency (gain/feed) was slightly greater (P is less than 0.05) for both sexes when receiving 20.2% crude protein as compared to 7.8%. Males were slightly more efficient (P is less than 0.05) than females at all dietary protein levels. Feed consumption tended to increase with increasing dietary protein concentration and these differences approached significance (P is less than 0.09). Serum protein concentration was higher (P is less than 0.04) for both sexes receiving 20.2% crude protein than for those receiving lower levels. No treatment or sex differences were noted for the electrophoretic fractions of serum protein or for hemoglobin or hematocrit.

Ullrey, D. E., W. G. Youatt, H. E. Johnson, L. D. Fay, B. E. Brent, and K. E. Kemp. DIGESTIBILITY OF CEDAR AND BALSAM FIR BROWSE FOR THE WHITE-TAILED DEER. J. Wildl. Mgmt. 32(1): 162-171, 1 fig. Jan. 1968. WR 129: 46
[Mich. State Univ., East Lansing.]

Verme, Louis J. INFLUENCE OF EXPERIMENTAL DIETS ON WHITE-TAILED DEER REPRODUCTION. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 405-420, 3 figs. 1967. WR 129: 46
[Mich. Dept. Conserv., Shingleton.] Summary: Reproductive response of white-tailed deer to various year-round dietary planes was determined for a captive herd in northern Michigan during an eight-year period. Compared to the rate for adult does subjected to inadequate nutrition during summer, or autumn, or both, productivity increased threefold when the animals received good rations. Food shortages in these seasons inhibited reproduction among yearlings much more than in prime-age females. Doe fawns that had been severely underfed over winter achieved average reproductive success the following autumn--as yearlings--provided they obtained proper nourishment throughout the intervening months. Barren deer and those whose offspring died at birth achieved high productivity on next estrus, because they had by then reached excellent physical condition. In contrast, mothers burdened with nursing young commonly were unable to fully recover from the fatigue of lactation and exhibited only mediocre productivity in the next breeding season. Males greatly

outnumbered females among the relatively few fawns born to does mating while on restricted rations, conversely, well-fed mothers produced a substantial excess of female progeny. Findings from these experiments, therefore, strongly indicate that reproduction of northern whitetails reflects the particular value of the total environment rather than being mainly influenced by winter range conditions. I suggest that the quality of spring, summer, and fall foods of the whitetail might be more important than many people think in determining the number of future targets for the hunter.

Vosdingh, R. A., D. O. Trainer, and B. C. Easterday. EXPERIMENTAL BLUETONGUE DISEASE IN WHITE-TAILED DEER. Canadian J. Comp. Med. & Vet. Sci. 32(1): 382-387, 2 figs. Jan. 1968. WR 129: 47

[Fort Detrick, Frederick, Md.] Abstract: Nine white-tailed deer and six sheep were experimentally exposed to the California BTV-8 strain of bluetongue virus. The infections were fatal for seven of the nine deer. An additional deer died from exposure to an isolate of bluetongue virus from bighorn sheep. Clinical signs and lesions of bluetongue in deer were described. The incubation period, signs and lesions of bluetongue and epizootic hemorrhagic disease of deer appear to be similar. Virus isolations were made from the blood and a variety of tissues of exposed deer and identified as bluetongue virus. Neutralizing antibodies were detected in all of the convalescent sera.

White, Charley M. A DEVICE FOR IMMOBILIZING TRAPPED DEER. J. Wildl. Mgmt. 31(4): 844-845, 1 fig. Oct. 1967. WR 129: 47

[Wis. State Univ., Stevens Point.] Abstract: A tool for administering immobilizing drugs to trapped white-tailed deer (Odocoileus virginianus) is described. The device, which consists of a modified Cap-Chur syringe attached to a specially designed plunger, enables one man to handle trapped deer safely.

White, Marshall Lee. POPULATION ECOLOGY OF SOME WHITETAIL DEER IN SOUTH TEXAS. Ph.D. thesis, Purdue Univ. 235 p. 1967. [From Dissertation Abstr. 28 (3B), 1967.] WR 129: 47

Population ecology of whitetail deer (Odocoileus virginianus) was investigated from June, 1963 through 1965. The Welder Wildlife Refuge on the Texas Coastal Bend was the major study area. Vegetation predominantly is mesquite savannah, chaparral, sandhill prairie, and mottes. This hot, humid, and unhunted area supports 90 to 128 deer per section. Production and losses vary with forage conditions, which in turn are dependent upon rainfall. Adult fetus-per-doe rates were 1.63 (1.43 to 1.87), and there were .42 (.13 to .72) fawns per adult doe in autumn. Fawn losses were 66 (46 to 87) percent in these first six months. Yearly herd losses were 75 percent fawn and 25 percent adult. Seventy percent of the fawn mortality occurred within two weeks of birth. A one-year study of the Aransas National Wildlife Refuge whitetails was included. This nearby area is dominated by dense stands of liveoak; its unhunted herd exceeds 100 per section. Summer fawn loss was 50 percent, and autumn fawns represented about 20 percent of the herd. This population has been expanding since the 1930's and now is reaching range capacity. The oak, providing more than half of the deer food (acorns alone made up 41 percent), and other browses and forbs furnish excellent forage; the diet is not restrictive at any season. Prolonged drought does not occur. Partially in response to these differences from the Welder refuge, the adult sex ratio is equal, and the seasonal weight loss common to bucks is absent. Aransas deer breed and fawn a month earlier also; apparently this is associated with the subspecies difference in these deer.

MAMMALS--MARINE

Andrews, J. Clinton, and Peter Rhoades Mott. GRAY SEALS AT NANTUCKET, MASSACHUSETTS. J. Mammal. 48(4): 657-658. Nov. 1967. WR 129: 47

[Quaise, Nantucket, Mass.] "Halichoerus grypus."

Csordas, S. E. A FEW FACTS ABOUT THE SOUTHERN ELEPHANT SEAL. Victorian Nat. 82(3): 70-74, illus. 1965. [From Biol. Abstr. 48(21), 1967.] WR 129: 48
"Mirounga leonina."

Johnson, Ancel M. ANNUAL MORTALITY OF TERRITORIAL MALE FUR SEALS AND ITS MANAGEMENT SIGNIFICANCE. J. Wildl. Mgmt. 32(1): 94-99. Jan. 1968. WR 129: 48
[Marine Mammal Biol. Lab., Sand Point Naval Air Sta., Seattle, Wash.] Abstract: The ages of 249 territorial male fur seals taken on St. Paul Island, Alaska, ranged from 7-17 years; the majority were aged 9-11 years. The ages of 156 males that died from natural causes were similar to the 249 killed. An annual mortality of 0.38 was estimated from the distribution of ages among these 405 adult males. An important cause of death is believed to be fighting. Few males under 10 years of age are successful in holding a breeding territory. Fifty percent of the territories on which males were killed were reoccupied within 24 hours, most replacements probably coming from the water rather than the land. Commercial use of young males could probably be increased without adversely affecting the productivity of the herd.

Klinkhart, Edward G. BIRTH OF A HARBOR SEAL PUP. J. Mammal. 48(4): 677. Nov. 1967. WR 129: 48
[Alaska Dept. Fish & Game, Anchorage.] "Phoca vitulina richardii."

MacLaren, J. P. MANATEES AS A NATURALISTIC BIOLOGICAL MOSQUITO CONTROL METHOD. Mosquito News 27(3): 387-393, 5 figs. Sept. 1967. WR 129: 48
[Health Bureau, Canal Zone Government.] "Although only five grown manatees were in the [7-acre] lagoon during the 2-year period, general conclusions can be made from the area observations: (1) manatees are selective in eating habits where there is abundant vegetation; (2) manatees will not remove all of offending vegetation which support mosquito breeding, either Mansonia or anophelene mosquitoes; and (3) the proliferous aquatic vegetation favored by the climatic conditions throughout the year will require a huge herd of manatees, possibly 1,000 to 2,000, an unrealistic number, to remove the continuous growth, if they would eat all species."

Plotkin, V. A. [POSSIBILITY OF AGE DETERMINATION IN WHALES BY THE LENS.] Zool. Zhur. 45(10): 1552-1556, illus. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 48
Due to the lens growth throughout the whole life of the whale, and to its stratification the lens may be used for age determination in whales.

Ridgway, Sam H., and James G. McCormick. ANESTHETIZATION OF PORPOISES FOR MAJOR SURGERY. Science 158(3800): 510-512, 1 fig. 27 Oct. 1967. WR 129: 48
[Naval Missile Center, Point Mugu, Calif.] Abstract: Comparison of three porpoises (Tursiops truncatus and Lagenorhynchus obliquidens) given nitrous oxide with 18 given halothane, with complete documentation of reflexes and comprehensive physiological monitoring, showed halothane to be a suitable anesthetic for major surgery while nitrous oxide was found to be inadequate. In addition, sodium thiopental administered intravenously was successfully used to facilitate intubation procedures. This development eliminated the need to intubate awake porpoises.

Shustov, A. P. [SOME SPECIFIC FEATURES OF THE HELMINTH FAUNA OF THE SEAL (HISTRIOPHOCA FASCIATA) IN THE BERING SEA.] Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanogr. 59: 193. 1965. [From Biol. Abstr. 48(23), 1967, from Referat. Zhur., Biol., 1966, no. 2K285. Transl. of Russian abstr.] WR 129: 48

Stull, J. W., W. H. Brown, and G. L. Kooyman. LIPIDS OF THE WEDDELL SEAL, LEPTONYCHOTES WEDDELLI. J. Mammal. 48(4): 642-645. Nov. 1967. WR 129: 48
[Univ. Ariz., Tucson.]

Watkins, William A. AIR-BORNE SOUNDS OF THE HUMPBACK WHALE, MEGAPTERA NOVAEANGLIAE. J. Mammal. 48(4): 573-578, 3 figs. Nov. 1967. WR 129: 49
[Woods Hole Oceanogr. Inst., Woods Hole, Mass.] Abstract: Unusual wheezing blows were recorded from humpback whales. This sound was audible both underwater and in air, and appeared to be produced at the blowhole during exhalation. The wheezing blow was composed of frequencies up to 2 kcps and lasted about 2 sec. The in-air and underwater components of this sound are compared. The wheezing blow is contrasted to normal blows, which can be plainly heard in air but are not audible underwater, and to the usual underwater calls, which can not be heard in the air. Spectrographic analyses of the three types of sounds are presented. The sounds of normal whale blows are described as variable; this is reflected in the variety of opinion in the literature on whales.

MAMMALS--OTHER GROUPS

Biggers, J. D. NOTES ON REPRODUCTION OF THE WOOLLY OPOSSUM (CALUROMYS DERBIANUS) IN NICARAGUA. J. Mammal. 48(4): 678-680. Nov. 1967. WR 129: 49
[Johns Hopkins School Hyg. & Public Health, Baltimore, Md.]

Kirkpatrick, T. H. A NOTE ON THE DENTAL ERUPTION OF SOME MACROPODINAE, WITH PARTICULAR REFERENCE TO CAPTAIN COOK'S KANGAROO. Queensland J. Agr. & Animal Sci. 20(4): 539-541, 1 fig. Dec. 1963. WR 129: 49
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] "Macropus robustus."

Kirkpatrick, T. H. MOLAR PROGRESSION AND MACROPOD AGE. Queensland J. Agr. Sci. 21(1): 163-165, 2 figs. Mar. 1964. WR 129: 49
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] "Macropus giganteus."

Kirkpatrick, T. H. STUDIES OF MACROPODIDAE IN QUEENSLAND. 3. REPRODUCTION IN THE GREY KANGAROO (MACROPUS MAJOR) IN SOUTHERN QUEENSLAND. Queensland J. Agr. & Animal Sci. 22: 319-328, 3 figs. 1965. WR 129: 49
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] Summary: Reproduction in the grey kangaroo has been studied in captivity and in two field populations. In captive animals, the oestrous cycle ranged from 41 to 43 days and the gestation period from 35 to 38 days. Pouch life of the young averaged 297 days; the interval between successive births, in the absence of a delayed embryo, averaged 356 days. Delayed embryos in captive females were produced at an oestrus occurring between 112 and 243 days after a birth; the delayed birth normally occurred when the first pouch young was between 291 and 312 days old. Female kangaroos in the field commenced reproductive activity at ages ranging from 17 to 28 months, with reduced fertility in old age (over 16 years). Delayed embryos were seldom found in field-collected kangaroos and only in those with pouch young older than 174 days. No defined breeding season was apparent, though more young were conceived during October-December than at other times. Approximately 50% of young failed to reach independence. Young suckled until 18 months of age both in captivity and in the field. Males were observed to be reproductively effective between the ages of 3 and 15 years.

Kirkpatrick, T. H. STUDIES OF MACROPODIDAE IN QUEENSLAND. 4. SOCIAL ORGANIZATION OF THE GREY KANGAROO (MACROPUS GIGANTEUS). Queensland J. Agr. & Animal Sci. 23: 317-322. 1966. WR 129: 49
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] Summary: Small mobs of the grey kangaroo are family groups. The relationships involved are those between a female and her young of the previous year, which may persist for a year, and the sexual association between a male and female, which is transient and related to the time of oestrus of the female. Larger mobs are feeding groups formed by coalescence of the smaller family units. Adult males and juveniles are irregularly distributed among mobs, and for a random sample from a kangaroo population, collections should be made from mobs of all sizes.

Kirkpatrick, T. H., and J. S. McEvoy. STUDIES OF MACROPODIDAE IN QUEENSLAND. 5. EFFECTS OF DROUGHT ON REPRODUCTION IN THE GREY KANGAROO (MACROPUS GIGANTEUS). Queensland J. Agr. & Animal Sci. 23: 439-442, 1 fig. 1966. WR 129: 50
[Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] Summary: Reproductive activity and survival of pouch young were studied in a population of grey kangaroo (Macropus giganteus Shaw) in the St. George district, southern Queensland, during a drought extending from September 1964 to December 1965. After 8 months of drought, reproductive activity virtually ceased and death of pouch young began to occur; reproduction did not return to normal until the drought broke. No young born between September 1964 and November 1965 survived the drought, and it is anticipated that for some years this will be reflected in population samples from this district.

Merchant, J. C., and G. B. Sharman. OBSERVATIONS ON THE ATTACHMENT OF MARSUPIAL POUCH YOUNG TO THE TEATS AND ON THE REARING OF POUCH YOUNG BY FOSTER-MOTHERS OF THE SAME OR DIFFERENT SPECIES. Australian J. Zool. 14: 593-609, 2 figs. + 3 pls. 1966. WR 129: 50
[Univ. New South Wales, Kensington, N.S.W., Australia.]

Roff, C., and T. Kirkpatrick. THE KANGAROO INDUSTRY IN QUEENSLAND. Queensland J. Agr. Sci. 19(3): 385-401, 8 figs. Sept. 1962. WR 129: 50
[Kirkpatrick= Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.]

Roff, C., and T. Kirkpatrick. THE KANGAROO INDUSTRY IN QUEENSLAND. FIRST SUPPLEMENT, 1961-1965. Queensland J. Agr. & Animal Sci. 23: 467-473. 1966. WR 129: 50
[Kirkpatrick= Div. Plant Industry, Hermitage Res. Sta., via Warwick, Queensland, Australia.] Summary: The total harvest for the period 1961-1965 was nearly four million marsupials, an increase of some 25% on that of the previous 5 years. Practically all this increase involved the grey kangaroo: from 1,450,000 to 2,490,000. Estimated annual income of the industry at the level of prices to shooters increased from £150,000 (1950-1960) to £450,000 (skins £390,000, carcasses £60,000) (1961-65).

Sharman, G. B., and Meredith J. Clark. INHIBITION OF OVULATION BY THE CORPUS LUTEUM IN THE RED KANGAROO, MEGALERI RUFA. J. Reprod. Fert. 14(1): 129-138. 1967. [From Biol. Abstr. 48(24), 1967.] WR 129: 50
[Univ. New South Wales, Kensington, Australia.]

Stodart, E. MANAGEMENT AND BEHAVIOUR OF BREEDING GROUPS OF THE MARSUPIAL PERAMELES NASUTA GEOFFROY IN CAPTIVITY. Australian J. Zool. 14: 611-623, 6 figs. + 2 pls. 1966. WR 129: 50
[CSIRO, Canberra, Australia.]

BIRDS--GENERAL

Packard, Gary C. EVOLUTION OF NORTH AMERICAN HOUSE SPARROWS IN RELATION TO ALTITUDE AND CLIMATIC ARIDITY. Ph.D. thesis, Univ. Kans. 86 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 50

Short, Lester L., Jr., and Chandler S. Robbins. AN INTERGENERIC HYBRID WOOD WARBLER (SEIURUS X DENDROICA). Auk 84(4): 534-543, 1 fig. Oct. 1967. WR 129: 50
[Am. Museum Nat. Hist., New York, N.Y.] Courtesy/ Paul A. Stewart.

BIRDS--TECHNIQUES

Drewien, Rod C., Henry M. Reeves, Paul F. Springer, and Thomas L. Kuck. BACK-PACK UNIT FOR CAPTURING WATERFOWL AND UPLAND GAME BY NIGHT-LIGHTING. J. Wildl. Mgmt. 31(4): 778-783, 1 fig. Oct. 1967. WR 129: 51

[S. Dak. Dept. Game, Fish & Parks, Aberdeen.] Abstract: A night-lighting unit, designed as a light weight back-pack, proved successful for capturing waterfowl pairs, pheasants (Phasianus colchicus), and cottontail rabbits (Sylvilagus floridanus) during the spring and summer when most breeding populations are widely dispersed. Eighty ducks of seven species were captured in 48 hours (1.7 ducks per hour) of night-lighting in marsh habitat. Similarly, 30 pheasants were trapped in 25 hours (1.2 birds per hour) and 63 cottontail rabbits were either observed at close range (6-12 ft) or captured during night-lighting operations in upland habitat. Catch per hour of effort increased for all species as their night habitat requirements and reaction to night-lights became known. The mobile unit proved well suited for intensive use on small areas where other methods of capture were unfeasible and where representative coverage of various habitat types was desired. Besides its utility for capturing animals, the unit provided a method for studying nocturnal movements, behavior, and habitat use of marked animals.

Houghton, E. W., and A. G. Laird. A PRELIMINARY INVESTIGATION INTO THE USE OF RADAR AS A DETERRENT OF BIRD STRIKES ON AIRCRAFT. Royal Radar Establishment Memo. 2353. 9 p. 1967. [From Ibis 109(4), 1967.] WR 129: 51

Tests at Slimbridge with X-band radiation, pulse duration 0.25 microseconds, frequency rate 9 Hz. to 2000 Hz., demonstrated no disturbing effects on either wild or captive birds.

Kadochnikov, N. P. [A PROCEDURE OF VITAL STUDY OF FEEDING HABITS OF ADULT BIRDS.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 72(1): 29-34. 1967. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 51

In addition to the existing method of ligatures applied for the study of feeding habits of the nestlings, a new procedure of vital study of feeding habits of adult birds is recommended. The procedure consists in the utilization of special chemical preparations making the birds vomit. The preparations are administered into the stomach through the mouth with the use of a rubber tube. The results of the first experiments showed that the application of emetics, of the tartar emetic in particular may be very promising for the study of feeding habits of birds. After the introduction of 1%-solution of antimony potassium tartrate the birds belch their food rather rapidly, so that hard particles of the food can be easily identified. This preparation has no toxic effect at a corresponding dosage (1 cm^3 for the rook, 0.5 cm^3 for the starling). The application of the new procedure is related to an additional development of the methods of selective catching of birds.

Salter, S. H., and M. Vince. THE USE OF CONDUCTING PAINT FOR RECORDING HATCHING TIMES. Med. & Biol. Engineering 4: 283-284. 1965. [From Ibis 109 (4), 1967.] WR 129: 51

A thin line of conducting silver paint applied around the eggshell prior to hatching forms part of a simple electronic recording circuit. On hatching the circuit is broken and the exact time recorded.

Thompson, R. D., and D. L. Ruhberg. A MINIATURIZED FOUR-CHANNEL RADIO TRANSMITTER WITH RECEIVING SYSTEM FOR OBTAINING PHYSIOLOGICAL DATA FROM BIRDS. Med. & Biol. Eng. 5: 495-504, 11 figs. 1967. In English with French and German summ. WR 129: 52

[Denver Wildl. Res. Center, Denver, Colo.] Abstract: A miniaturized FM/FM four-channel radio transmitter was developed for telemetering physiological data. The transmitter weighs 24 g and has a volume of 1.5 cu. in. Transmitting frequency is 91 Mc/s and stable signal reception has been obtained at a distance of 200 ft. The system was developed to simultaneously study EEG, ECG, respiration, and temperature of wild birds such as pigeons (Columba livia), but its application is not limited to birds. With proper selection and placement of sensors and transducers, physiological parameters other than the above may be measured. The transmitter meets IRIG (Inter Range Instrumentation Group) standards for channels 13, 14, 15, and 16, and a receiving system that meets these standards can be used to filter and demodulate the transmitted signal.

Ward, P. R. B. CONTINUOUS RECORDING OF BIRD NESTING VISITS USING RADIOACTIVE TAGGING. Nature 216(5115): 592-593, 1 fig. 11 Nov. 1967. WR 129: 52

[Agr. Res. Council of Central Africa, Salisbury, Rhodesia.]

Wilbur, Sanford R. LIVE-TRAPPING NORTH AMERICAN UPLAND GAME BIRDS. US F&WS, Spec. Sci. Rept.--Wildl. no. 106. ii + 37 p., 15 figs. June 1967. WR 129: 52

[Div. Wildl. Refuges, Portland, Oreg.] "The object of this paper is to bring together materials on the various methods used to trap upland species. Emphasis has been placed on compiling a comprehensive list of pertinent literature rather than on treating each technique in detail; more extensive treatment is given data not readily available elsewhere."

BIRDS--MORPHOLOGY & PHYSIOLOGY

Berthold, P. ÜBER AN- UND EINLAGERUNG VON EISENOXID ALS FEDERFARBSTOFF. [ON THE FORMATION AND DEPOSITION OF IRON OXIDE AS FEATHER-COLORATION.] Naturwissenschaften 53: 338. 1966. [From Ibis 109(4), 1967. In German.] WR 129: 52

Berthold, P. ON ADHERENT COLOURS OF THE PLUMAGE. Bull. British Ornithol. Club 87: 89-90. 1967. [From Ibis 109(4), 1967.] WR 129: 52

Berthold, P. ÜBER HAFTFARBEN BEI VÖGELN: ROSTFARBUNG DURCH EISENOXID BEIM BARTGEIER (GYPAETUS BARBATUS) UND BEI ANDEREN ARTEN. [ON ADHERENT COLORS OF BIRDS: RUST-COLORATION IN THE LAMMERGEIER (GYPAETUS BARBATUS) AND IN OTHER SPECIES.] Zool. Jb. 93: 507-595. 1967. [From Ibis 109(4), 1967. In German with English summ.] WR 129: 52

Boswall, Jeffery H. R., and Myles E. W. North. A DISCOGRAPHY OF BIRD SOUND FROM THE ETHIOPIAN ZOOGEOGRAPHICAL REGION. Ibis 109(4): 521-533. Oct. 1967. WR 129: 52

[B.B.C. Nat. Hist. Unit, Bristol, England.]

Britton, P. L. WEIGHTS OF THE CARMINE BEE-EATER MEROPS NUBICOIDES. Ibis 109(4): 606-614, 6 figs. Oct. 1967. WR 129: 52

[Balovale Secondary School, P.O. Box 22, Balovale, Zambia.]

Cloudsley-Thompson, J. L., and El Rasid Musa Mohamed. WATER ECONOMY OF THE OSTRICH. Nature 216(5119): 1040. 9 Dec. 1967. WR 129: 52

[Univ. Khartoum, United Arab Republic.] "These observations indicate that ostriches can survive dehydration to a greater extent than can gazelles and more closely resemble the camel in this respect."

Dolnik, Victor R., and Tatyana I. Blyumental. AUTUMNAL PREMIGRATORY AND MIGRATORY PERIODS IN THE CHAFFINCH (FRINGILLA COELEBS COELEBS) AND SOME OTHER TEMPERATE-ZONE PASSERINE BIRDS. Condor 69(5): 435-468, 21 figs. Sept.-Oct. 1967. WR 129: 53

[Biol. Sta. at Rybachy, Zool. Inst. USSR Acad. Sci., Leningrad, B-164, USSR.] "A short review of the research on metabolism and behavior of some migratory birds conducted at the Biological Station of the Zoological Institute of the Academy of Science of the USSR located at the Kurishe Nehrung in the Baltic Sea. Most of the data on which this review is based have been published in various Russian journals."--Courtesy/ Paul A. Stewart.

Follett, Brian K., Donald S. Farner, and Martin L. Morton. THE EFFECTS OF ALTERNATING LONG AND SHORT DAILY PHOTOPERIODS ON GONADAL GROWTH AND PITUITARY GONADOTROPINS IN THE WHITE-CROWNED SPARROW, ZONOTRICHIA LEUCOPHRYS GAMBELII. Biol. Bull. 133(2): 330-342, 4 figs. Oct. 1967. WR 129: 53

[Univ. Leeds, Leeds 2, England.] Summary: The characteristics of the gonadal photoperiodic responses in the white-crowned sparrow, Zonotrichia leucophrys gambelii, have been examined by the use of cyclic photoperiodic regimes consisting of a day with a long photoperiod followed by n days with short, non-stimulatory daily photoperiod, n with the range 0-5; responses measured were the rates of gonadal growth and the concentration of pituitary gonadotropin. The gonadotropic effect of a single 20-hour photoperiod extends through at least seven days with short (8-hour) non-stimulatory photoperiods. The apparently simplest interpretation of the results of the experiments suggests that there must be separate, although perhaps not completely independent, control schemes for synthesis and release of pituitary gonadotropin.

Harriman, A. E., and M. R. Kare. AVERSION TO SALINE SOLUTIONS IN STARLINGS, PURPLE GRACKLES, AND HERRING GULLS. Physiol. Zoöl. 39: 123-126. 1966. [From Ibis 109(4), 1967.] WR 129: 53

Results show that none of these birds show a preference either for freshwater or salt solutions of varying concentrations, when these were presented in two-bottle choice tests.

Harriman, A. E., and M. R. Kare. TOLERANCE FOR HYPERTONIC SALINE SOLUTIONS IN HERRING GULLS, STARLINGS AND PURPLE GRACKLES. Physiol. Zoöl. 39: 117-122. 1966. [From Ibis 109(4), 1967.] WR 129: 53

Duration of survival was inversely related to molarity of NaCl in all three species with the starling least tolerant at a limit of 0.25 mole NaCl and the herring gull most tolerant at 0.75 mole NaCl, although the gulls ingested very little fluid at this concentration. It is suggested that the nasal salt gland may not be as efficient in the herring gull as it appears to be in more pelagic species of sea-birds.

Kale, Herbert W., II. WATER SOURCES OF THE LONG-BILLED MARSH WREN IN GEORGIA SALT MARSHES. Auk 84(4): 589-591. Oct. 1967. WR 129: 53

[Entomol. Res. Center, P.O. Box 308, Vero Beach, Fla.] Caged long-billed marsh wrens (Telmatodytes palustris) ate more food containing high water contents when they were deprived of water or supplied with salt-marsh water than at other times.--Courtesy/ Paul A. Stewart.

Parkes, Kenneth C. PREALTERNATE MOLT IN THE SUMMER TANAGER. Wilson Bull. 79(4): 456-458. Dec. 1967. WR 129: 53

[Carnegie Museum, Pittsburgh, Pa.] Courtesy/ Paul A. Stewart.

Ricklefs, Robert E. RELATIVE GROWTH, BODY CONSTITUENTS, AND ENERGY CONTENT OF NESTLING BARN SWALLOWS AND RED-WINGED BLACKBIRDS. Auk 84(4): 560-570, 5 figs. Oct. 1967. WR 129: 53

[Smithsonian Tropical Res. Inst., P.O. Box 2072, Balboa, Canal Zone.] The locomotory organs and plumage became progressively larger, while food processing organs and the head declined in relative size. The water index of the tissues declined as the nestling developed, from approximately 6 at hatching to between

2 and 3 at fledging. The lipid contents of both species (Hirundo rustica and Agelaius phoeniceus) increased with age. Ash content, expressed as a percentage of the lean dry weight, did not change appreciably in the nestling as a whole but increased in those components which contained bone and decreased in the soft parts. The weight-specific energy content of nestlings (Kcals per gram of wet weight) increased from approximately 0.6 at hatching to about 1.3 and 2.0 at fledging in the blackbird and the swallow, respectively.--From summ. Courtesy/ Paul A. Stewart.

Ricklefs, Robert Eric. THE SIGNIFICANCE OF GROWTH PATTERNS IN BIRDS. Ph.D. thesis, Univ. Pa. 118 p. 1967. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 54

It is concluded that external environmental forces, such as nesting mortality, exert strong selective forces and maintain growth patterns at physiological limits, but they play a small role in producing variation in the growth pattern. More important are physiological limitations whose variability is related to adaptation to feeding ecology.

BIRDS--BEHAVIOR & MIGRATION

Abe, M. [ON THE BREEDING HABITS OF THE HORNBILLED PUFFIN, CERORHINCA MONOCERATA PALLAS AND ITS DAMAGE BY OWNERLESS DOGS (?) IN TEURI ISLAND, HOKKAIDO.] Tori 18: 166-179. 1967. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 54

Bell, H. L. BOWER "PAINTING" BY LAUTERBACH'S BOWERBIRD. Emu 66(4): 353-355. June 1967. WR 129: 54

[Taurama Barracks, Port Moresby, Papua.]

Calder, William A. BREEDING BEHAVIOR OF THE ROADRUNNER, GEOCOCCYX CALIFORNIANUS. Auk 84(4): 597-598. Oct. 1967. WR 129: 54

[Va. Polytech. Inst., Blacksburg.] Courtship and copulation of caged birds and rearing of young in captivity are described.--Courtesy/ Paul A. Stewart.

Cameron, R. A. D., L. Cornwallis, M. J. L. Percival, and A. R. E. Sinclair. THE MIGRATION OF RAPTORS AND STORKS THROUGH THE NEAR EAST IN AUTUMN. Ibis 109 (4): 489-501, 4 figs. Oct. 1967. WR 129: 54

[Manchester Univ., Manchester, England.]

Davis, B. N. K. BIRD FEEDING PREFERENCES AMONG DIFFERENT CROPS IN AN AREA NEAR HUNTINGDON. Bird Study 14(4): 227-237, 4 figs. Dec. 1967. WR 129: 54

[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.] Summary: A study of bird activity was made within an area of about 100 acres (40 ha.) which included a small pasture, crops of field beans, peas, rape and wheat and about 2,200 yd. (2,000 m.) of hedgerow. Thirteen species of birds bred in the area and a further sixteen species were regular or casual visitors. Seventeen visits were made between 17 May and 20 July and birds were recorded in the hedges, fields and roadside verges during a standard walk. These records suggested a tendency for the hedgerow nesting species to feed near the edges of fields rather than out in the middle during this period. More birds were seen in the bean, pea and rape crops than in the wheat and the pea field supported an especially large population. Examination of six sparrows and two skylarks taken about the end of June showed that these were feeding mainly on beetles and aphids occurring on the crops rather than on soil invertebrates. Insecticides were not used at this site in 1966 but attention is directed to the possible impact of DDT on birds when used against pea moth or the rape blossom beetle in such circumstances.

Eddinger, C. Robert. FEEDING HELPERS AMONG IMMATURE WHITE-EYES. Condor 69 (5): 530-531. Sept.-Oct. 1967. WR 129: 55
[Univ. Hawaii, Honolulu.] Older hand-reared Zosterops palpebrosa fed younger birds of the same species soon after being introduced into the same cage.--Courtesy/ Paul A. Stewart.

Emlen, Stephen T. MIGRATORY ORIENTATION IN THE INDIGO BUNTING, PASSERINA CYANEA. PART II: MECHANISM OF CELESTIAL ORIENTATION. Auk 84(4): 463-489, 11 figs. Oct. 1967. WR 129: 55
[Cornell Univ., Ithaca, N.Y.] When exposed to planetarium skies advanced or retarded 3, 6, and 12 hours from local time, indigo buntings continued to maintain their normal Zugunruhe orientation. This implies that the birds were not relying upon a bicoordinate celestial navigation system; neither were they employing a form of time-compensation analogous to that proposed in sun-compass orientation. Rather, it is hypothesized that the birds make use of additional information provided by the existence of numerous stars and by the constant, two-dimensional, spatial relationships which exist between them; they determine the migration direction by responding to Gestalt stimuli provided by star patterns. Both theoretical considerations and empirical evidence further suggested that the circumpolar area within 35° of the North Star may be important if not essential to this orientation process.--From summ. Courtesy/ Paul A. Stewart.

Evans, Raymond N. NEST SITE MOVEMENTS OF A POOR-WILL. Wilson Bull. 79(4): 453. Dec. 1967. WR 129: 55
[Univ. Nev., Reno.] The nestlings were repeatedly moved as far as 35 feet because of human disturbances.--Courtesy/ Paul A. Stewart.

Ferguson, Denzel E. A POSSIBLE CASE OF EGG TRANSPORT BY A CHUCK-WILL'S-WIDOW. Wilson Bull. 79(4): 452-453. Dec. 1967. WR 129: 55
[Miss. State Univ., State College.] After disturbance, a chuck-will's-widow (Caprimulgus carolinensis) may have moved its two eggs to a nest 15 feet from the original nest.--Courtesy/ Paul A. Stewart.

Forsyth, Billy Joe. VERNAL, NOCTURNAL, LANDBIRD MIGRATION IN THE GULF COASTAL BEND REGION OF TEXAS. Ph.D. thesis, Univ. Ark. 85 p. 1967. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 55

Funderburg, J. B. COMMON CROWS PREYING ON FERAL PIGEONS. Fla. Nat. 40: 67. 1967. [From Auk 84(4), 1967.] WR 129: 55

Gould, Patrick J. NOCTURNAL FEEDING OF STERNA FUSCATA AND PUFFINUS PACIFICUS. Condor 69(5): 529. Sept.-Oct. 1967. WR 129: 55
[Smithsonian Inst., Washington, D.C.] Sooty terns and wedge-tailed shearwaters were observed catching fish at night.--Courtesy/ Paul A. Stewart.

Hamilton, William J., III. TEMPORAL PATTERN OF NOCTURNAL ACTIVITY OF A CAGED FOX SPARROW. Animal Behaviour 15(4): 527-533, 5 figs. Oct. 1967. WR 129: 55
[Univ. Calif., Davis.] "Passerella iliaca."

Hardy, John William. THE PUZZLING VOCAL REPERTOIRE OF THE SOUTH AMERICAN COLLARED JAY, CYANOLYCA VIRIDICYANA MERIDA. Condor 69(5): 513-521, 5 figs. Sept.-Oct. 1967. WR 129: 55
[Occidental Coll., Los Angeles, Calif.] Courtesy/ Paul A. Stewart.

Harrison, C. J. O. SIDEWAYS-THROWING AND SIDEWAYS-BUILDING IN BIRDS. Ibis 109(4): 539-551. Oct. 1967. WR 129: 55
[14 Dawlish Ave., Perivale, Middlesex, England.] Sideways-throwing and sideways-building occur in the Struthionidae, Rheidae, Dromaiidae, Gaviformes, Procellariformes, Anseriformes, Meleagrididae, Phasianidae, Gruidae and Charadriiformes. Sideways-building only is recorded in the Sulidae and, for Platalea leucorodia, in the Threskiornithidae. There are no records of nest-building in the Apterigidae, Tinamidae, Otidae, and Pteroclididae.--From summ.

Heintzelman, Donald S., and Thomas V. Armentano. AUTUMN BIRD MIGRATION AT BAKE OVEN KNOB, PENNSYLVANIA. Cassinia 48: 2-18, illus. 1964. [From Biol. Abstr. 48(21), 1967.] WR 129: 56
[629 Green St., Allentown, Pa.]

Hosono, T. [A STUDY OF THE LIFE HISTORY OF BLUE MAGPIE (3). CHICK FOODS.] Misc. Repts. Yamashina's Inst. Ornithol. Zool. 4: 481-487. 1966. [From Auk 84 (4), 1967. In Japanese with English summ.] WR 129: 56

Howard, Deborah V. VARIATION IN THE BREEDING SEASON AND CLUTCH-SIZE OF THE ROBIN IN THE NORTHEASTERN UNITED STATES AND THE MARITIME PROVINCES OF CANADA. Wilson Bull. 79(4): 432-440, 1 fig. Dec. 1967. WR 129: 56
[Mass. Audubon Soc., Lincoln.] Summary: A total of 1,605 nest record cards from New York and Massachusetts and the Maritime Provinces of Canada were examined for variations in the breeding season and clutch-size of the robin. In all areas but Massachusetts, clutch-size is higher in May than in April or June, suggesting a peak during that month. Clutch-size is significantly lower in the Maritimes than in New York-Massachusetts and declines steadily from New Brunswick to Nova Scotia to Prince Edward Island. The breeding season is approximately two weeks earlier in New York-Massachusetts than in the Maritime Provinces.--Courtesy/ Paul A. Stewart.

Kurata, A. [THE SOCIAL STRUCTURE OF BULL-HEADED SHRIKE, WITH SPECIAL REFERENCE TO THE TERRITORIALITY OF ITS BREEDING SEASON.] Tori 18: 153-164. 1967. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 56

Kuroda, N. [A MASS INLAND DRIFT OF STREAKED SHEARWATERS OVER KANTO PLAIN IN NOVEMBER, 1965.] Misc. Repts. Yamashina's Inst. Ornithol. Zool. 4: 388-396. 1966. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 56

Kuroda, N. H. [A SHORT NOTE ON THE TERRITORIAL OBSERVATIONS OF JAPANESE TURDUS CARDIS.] Misc. Repts. Yamashina's Inst. Ornithol. Zool. 4: 469-480. 1966. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 56

Lemon, Robert E. THE RESPONSE OF CARDINALS TO SONGS OF DIFFERENT DIALECTS. Animal Behaviour 15(4): 538-545, 3 figs. Oct. 1967. WR 129: 56
[McGill Univ., Montreal, Quebec.] Summary: (1) Tape recordings of cardinal songs were played to male cardinals holding territories near Komoka and Melbourne, Ontario, Canada. (2) Fifteen birds at Komoka heard a local song type, a song type from a distance of 7 mi (11 km), and one from Texas from a distance of over 2000 mi (3200 km). Thirteen birds at Melbourne heard a local song type and one from 21 mi (34 km). (3) Two responses were noted: approaching the playing speaker, and the number of songs before, during and after playback. (4) At both localities the birds showed far more response to the local song types. The response to the song type from the distance of 7 mi was somewhat greater than to the more distant ones, at least in terms of the number of approaches.

Likhachev, G. N. [SIZE OF CLUTCHES OF MUSCICAPA HYPOLEUCA AS A FUNCTION OF FEMALE AGE.] Zool. Zhur. 45(8): 1267-1269, illus. 1966. [From Biol. Abstr. 48(24), 1967. In Russian with English summ.] WR 129: 56
[Prioksko-Terrasnyi Game Preserve (Moscow Province), P.O. Danki, USSR.]

Medway, Lord. THE FUNCTION OF ECHONAVIGATION AMONG SWIFTLETS. Animal Behaviour 15(4): 416-420. Oct. 1967. WR 129: 56
[Univ. Malaya, Kuala Lumpur, Malaysia.] Summary: The sensitivity of the echonavigating system of Collocalia fuciphaga was tested under experimental conditions. In total darkness these swiftlets were able to fly and to avoid collision with the walls of the flight chamber, but apparently had difficulty in detecting a barrier of vertical wooden rods 1 cm square in crosssection, placed 15 cm apart. One Collocalia esculenta was also tested. It apparently lacked all ability to orientate in flight in darkness and was unable to avoid collision with the walls of the flight chamber.

Morse, Douglass H. COMPETITIVE RELATIONSHIPS BETWEEN PARULA WARBLERS AND OTHER SPECIES DURING THE BREEDING SEASON. Auk 84(4): 490-502. Oct. 1967. WR 129: 57

[Univ. Md., College Park.] In Maine, parula warblers (Parula americana) occurred chiefly on the edges of spruce forests; in Louisiana they occurred uniformly throughout an oak-gum forest. In both areas, foraging was chiefly on tips of the foliage. Golden-crowned kinglets (Regulus satrapa) also foraged on foliage tips and used inner foliage and small dead limbs more often than parula warblers. Black-throated green warblers (Dendroica virens) used the tips of live foliage more than any other Dendroica, but not as often as parula warblers and golden-crowned kinglets. Several other warblers shared the Louisiana study area with parula warblers, but parula warblers were alone in the upper canopy. It is concluded that kinglets and other warblers are an important factor limiting the distribution of parula warblers in the spruce forest.--From summ. Courtesy/ Paul A. Stewart.

Morton, Martin L. DIURNAL FEEDING PATTERNS IN WHITE-CROWNED SPARROWS, ZONOTRICHIA LEUCOPHRYS GAMBELII. Condor 69(5): 491-512, 10 figs. Sept.-Oct. 1967. WR 129: 57

[Occidental Coll., Los Angeles, Calif.] The following are discussed: flock territories, annual events, feeding modes, feeding habits of wild flocks and outdoor captives, effects of air temperature on food intake, feeding patterns in relation to ambient light, factors affecting the diurnal feeding pattern, factors involved in premigratory fattening, effects of food deprivation, rhythmicity of feeding, and the early termination of feeding and its possible meaning.--Courtesy/ Paul A. Stewart.

Mulligan, J. A. SINGING BEHAVIOUR AND ITS DEVELOPMENT IN THE SONG SPARROW MELOSPIZA MELODIA. Univ. Calif. Publs. Zool. 81. 76 p. 1966. [From Ibis 109(4), 1967.] WR 129: 57

Nakamura, T. [DISPLAY FOR WINTER FLOCKING BEHAVIOUR OF LONG-TAILED TIT.] Tori 18: 143-152. 1967. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 57

Newton, I. THE FEEDING ECOLOGY OF THE BULLFINCH (PYRRHULA PYRRHULA L.) IN SOUTHERN ENGLAND. J. Animal Ecol. 36(3): 721-744, 2 figs. Oct. 1967. WR 129: 57

[Edward Grey Inst. Field Ornithol., Botanic Garden, Oxford, England.]

Otvos, Imre S. OBSERVATIONS ON THE FEEDING HABITS OF SOME WOODPECKERS AND WOODCREEPERS IN COSTA RICA. Condor 69(5): 522-525. Sept.-Oct. 1967. WR 129: 57

[Univ. Calif., Berkeley.] Results of field observations and stomach examinations to determine nature of food of 6 spp. of Picidae and 2 spp. of Dendrocolaptidae are reported.--Courtesy/ Paul A. Stewart.

Ricklefs, Robert E. A CASE OF CLASSICAL CONDITIONING IN NESTLING CACTUS WRENS. Condor 69(5): 528-529. Sept.-Oct. 1967. WR 129: 57

[Smithsonian Tropical Res. Inst., Box 2072, Balboa, Canal Zone.] Nestling cactus wrens (Campylorhynchus brunneicapillus) were conditioned to give begging reaction in response to the click of an automatic event recorder.--Courtesy/ Paul A. Stewart.

Ricklefs, Robert E., and F. Reed Hainsworth. THE TEMPORARY ESTABLISHMENT OF DOMINANCE BETWEEN TWO HAND-RAISED JUVENILE CACTUS WRENS (CAMPYLORHYNCHUS BRUNNEICAPILLUS). Condor 69(5): 528. Sept.-Oct. 1967. WR 129: 57

[Smithsonian Tropical Res. Inst., Box 2072, Balboa, Canal Zone.] Courtesy/ Paul A. Stewart.

Ruschi, A. [SOME OBSERVATIONS ON THE MIGRATION OF HUMMINGBIRDS IN BRAZIL.] Bol. Mus. Biol. Prof. Mello-Leitão, Zool. 28: 1-5. 1967. [From Auk 84(4), 1967. In Portuguese with English summ.] WR 129: 58

Sauer, E. G. Franz, and E. M. Sauer. YAWNING AND OTHER MAINTENANCE ACTIVITIES IN THE SOUTH AFRICAN OSTRICH. Auk 84(4): 571-587, 9 figs. Oct. 1967. WR 129: 58

[Univ. Fla., Gainesville.] Yawning in the African ostrich (Struthio camelus australis) is a maintenance activity which assists in regulating the physiological state of the birds. Yawning and accompanying stretching behavior are correlated with the periodic appearance of fatigue in the ostrich, and they occur typically in birds whose motor activities have been reduced to a minimum. Yawning, stretching, and panting are primarily activated by endogenous stimulation, but they can also be facilitated by environmental stimuli when the organism is otherwise sufficiently motivated. This maintenance activity can exert social influence when given in the presence of other members of a flock and thus cause sleepiness among more wary individuals.--Courtesy/ Paul A. Stewart.

Skutch, Alexander F. ADAPTIVE LIMITATION OF THE REPRODUCTIVE RATE OF BIRDS. Ibis 109(4): 579-599. Oct. 1967. WR 129: 58

[El Quizarrá, San Isidro del General, Costa Rica.] Topics of discussion: Adjusted versus maximum reproduction, alternative mutations affecting the rate of reproduction, relations affecting the rate of reproduction, relation of brood size to the number of attendants, hole-nesting birds, the relation of clutch size to the number of fledged young, some misconceptions, density-dependent adjustments of the rate of reproduction, and a unique evolutionary problem.

Stepanyan, L. S. [HISTORY OF THE GENUS REGULUS (REGULIDAE, PASSERIFORMES) IN THE LIGHT OF THE THEORY OF THE BERING CONTINENTAL LINKS.] Zhur. Obshch. Biol. 27(6): 673-680. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 58

[Lenin Moscow Pedagog. Inst., Moscow, USSR.]

Stonehouse, Bernard. FEEDING BEHAVIOUR AND DIVING RHYTHMS OF SOME NEW ZEALAND SHAGS, PHALACROCORACIDAE. Ibis 109(4): 600-605, 3 figs. Oct. 1967. WR 129: 58

[Canterbury Univ., Christchurch, New Zealand.] Summary: Records of the duration of the dives and resting periods of two species of shags, which fish in the coastal waters of New Zealand's South Island, show the existence of an ecological segregation whereby each species is working within the limits of its greatest physiological efficiency. The smaller species hunts only in shallow water, the larger maintains efficient dive/rest ratios in deeper off-shore water.

Tickell, W. L. N. MOVEMENTS OF BLACK-BROWED AND GREY-HEADED ALBATROSSES IN THE SOUTH ATLANTIC. Ibis 66(4): 357-367, 2 figs. June 1967. WR 129: 58

[Nature Conservancy, 12 Hope Terrace, Edinburgh, Scotland.]

White, D. J. B. HOUSE MARTINS ATTACKING YOUNG CUCKOO. British Birds 60 (12): 523. Dec. 1967. WR 129: 58

Won, P. O., H. C. Woo, M. Z. Chun, and K. W. Ham. [CHICK FOOD ANALYSIS OF SOME KOREAN BIRDS.] Misc. Repts. Yamashina's Inst. Ornithol. Zool. 4: 445-468. 1966. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 58

Won, P. O., H. C. Woo, K. W. Ham, and M. B. Yoon. [SEASONAL DISTRIBUTION AND ECOLOGY OF MIGRANT BIRD POPULATIONS BY MIST-NETTING AND BANDING IN KOREA (I).] Misc. Repts. Yamashina's Inst. Ornithol. Zool. 4: 405-444. 1966. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 58

Brandt, H. D., and André Malherbe. A REVISED LIST OF THE BIRDS OF POTCHEFSTROOM. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 51. 32 p. 1967. Price 40¢. WR 129: 59
Annotated list of 325 spp.

Brewer, Richard. BIRD POPULATIONS OF BOGS. Wilson Bull. 79(4): 371-396, 4 figs. Dec. 1967. WR 129: 59
[Western Mich. Univ., Kalamazoo.] A sphagnum-leatherleaf-tamarack bog had an average density of about 170 male birds per 100 acres; a yellow birch-red maple-white pine bog forest had an average density of 270 males per 100 acres. The concept of bogs as boreal islands is valid for a certain range of latitudes. North of this, bogs are not much more boreal than surrounding vegetation and southward the number of boreal species rapidly diminishes until in southwestern Michigan there is practically no boreal character to the bird population.--From summ. Courtesy/ Paul A. Stewart.

Clapp, Roger B., and Paul W. Woodward. NEW RECORDS OF BIRDS FROM THE HAWAIIAN LEEWARD ISLANDS. Proc. US Natl. Museum 124(3640): 1-39. 1967. WR 129: 59

Clarke, Gordon. BIRD NOTES FROM ADEN COLONY. Ibis 109(4): 516-520. Oct. 1967. WR 129: 59

Eisenmann, E., and H. Loftin. FIELD CHECKLIST OF THE BIRDS OF THE PANAMA CANAL ZONE AREA. Fla. Audubon Soc. 35 p. 1967. [From Auk 84(4), 1967. Available from Florida Audubon Soc., P.O. Drawer 7, Maitland, Fla. at 20¢.] WR 129: 59
"Covers some 500 species."

Fowler, Susan. HAMPTON SALT MARSH BIRDS. N.H. Audubon Quart. 20(4): 129-135, 2 figs. Oct. 1967. WR 129: 59
[Univ. Vt., Burlington.] "An attempt to illustrate the importance of the Hampton [N.H.] area salt marsh, as a feeding and resting area for waterfowl and shorebirds."

Keith, Stuart. NEW BIRD RECORDS FROM ALASKA AND THE ALASKA HIGHWAY. Canadian Field-Nat. 81(3): 196-200. July-Sept. 1967. WR 129: 59
[Am. Museum Nat. Hist., New York, N.Y.]

Kuchin, A. P. [THE WINTER BIRD FAUNA OF THE UPPER OB REGION.] Izvest. Alta: Otdel. Geogr. Obshch. SSSR 5: 152-153. 1965. [From Biol. Abstr. 48(23), 1967, from Referat. Zhur., Biol., 1966, no. 1I284. Transl. of Russian abstr.] WR 129: 59

Lane, J. E. A BIRDWATCHERS' GUIDE TO SOUTHEASTERN ARIZONA. L & P Photography. 46 p. 1965. [From Auk 84(4), 1967. Available from L & P Photography, 2010 Hickory St., Santa Ana, Calif., at $1.50.] WR 129: 59

Mills, Eric L. BIRD RECORDS FROM SOUTHWESTERN ECUADOR. Ibis 109(4): 534-538. Oct. 1967. WR 129: 59
[Dalhousie Univ., Halifax, Nova Scotia, Canada.] Of the 25 spp. listed, 19 are sea-birds and a number are species not reported from the area.

Morrissey, Thomas J. NOTES OF BIRDS IN THE DAVENPORT AREA. PART I. WATERFOWL. Iowa Bird Life 37(4): 75-97, illus. Dec. 1967. WR 129: 59
Part 1 of 4. Based on observations covering the period 1938-50.

Pinto, A. A. daR. [CONTRIBUTION TO THE KNOWLEDGE OF THE AVIFAUNA OF THE NORTHEAST REGION OF THE DISTRICT OF MOXICO, ANGOLA.] Biol. Inst. Invest. Cient. Angola 1: 153-249. 1965. [From Auk 84(4), 1967. In Portuguese with English summ.] WR 129: 59
Notes on food, behavior, habitat and taxonomy of 335 forms.

Reed, R. A. THE BIRDS OF TONQANI, CHAPEL AVENUE, BRYANSTON BORDER. South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol. no. 50. 18 p. 1967. Price 20¢. WR 129: 60

Speirs, J. Murray, and Ronald Orenstein. BIRD POPULATIONS IN FIELDS OF ONTARIO COUNTY, 1965. Canadian Field-Nat. 81(3): 175-183. July-Sept. 1967. WR 129: 60
[Univ. Toronto, Toronto, Ontario, Canada.]

Steffee, N. D., and C. R. Mason. FIELD CHECKLIST OF THE BIRDS OF THE GUIANAS. Fla. Audubon Soc. 31 p. 1966. [From Auk 84(4), 1967. Available from Florida Audubon Soc., P.O. Drawer 7, Maitland, Fla., at 20¢.] WR 129: 60
Covers the three Guianas, indicating by scientific and common names some 600 plus species.

Sukhinin, A. N., G. S. Bel'skaya, and A. O. Tashliev. [CHARACTERISTICS OF THE BIRD POPULATION OF SOME REGIONS OF WESTERN KOPET DAGH (MOUNTAIN RANGE).] Izvest. Akad. Nauk Turkm. SSR Ser. Biol. Nauk 1: 71-75. 1966. [From Biol. Abstr. 48(21), 1967. In Russian.] WR 129: 60

Tatschl, John L. BREEDING BIRDS OF THE SANDIA MOUNTAINS AND THEIR ECOLOGICAL DISTRIBUTIONS. Condor 69(5): 479-490, 2 figs. Sept.-Oct. 1967. WR 129: 60
[Univ. Kans., Lawrence.] An annotated list of 154 spp. recorded of which 92 were considered to be breeding birds.--Courtesy/ Paul A. Stewart.

van Tets, G. F., and P. A. van Tets. A REPORT ON THE RESIDENT BIRDS OF THE TERRITORY OF CHRISTMAS ISLAND. Emu 66(4): 309-317, 3 figs. June 1967. WR 129: 60
[CSIRO, Canberra, Australia.]

Wiens, John Anthony. AN APPROACH TO THE STUDY OF ECOLOGICAL RELATIONSHIPS AMONG GRASSLAND BIRDS. Ph.D. thesis, Univ. Wis. 321 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 60
During the breeding seasons of 1964-1966, the ecological relationships between bobolinks, eastern meadowlarks, western meadowlarks, savannah sparrows, grasshopper sparrows, Henslow's sparrows, and vesper sparrows, were studied on an 80 acre grassland site south of Madison, Wisconsin. The objectives of this study were to develop and test a method for describing and analyzing habitats which would be useful in elucidating ecological relationships among grassland birds.

Williamson, Kenneth. THE BIRD COMMUNITY OF FARMLAND. Bird Study 14(4): 210-226. Dec. 1967. WR 129: 60
Summary: Since agricultural land embraces 80% of England and Wales it must be considered the most extensive bird habitat in the countryside. Its main feature is a complex hedgerow system that is not more than 200-300 years old. The expansion of the human population, and current trends in farming practice, are eroding this habitat to an increasing degree. The composition of a 'typical' English lowland farm bird community at the present day is examined by analysing 28 returns from Common Birds Census plots, totalling 2,200 hectares, in the central Midlands. The incidence and densities of 58 spp. on this group of farms are given. Over the country as a whole, low densities and poor species representation are found in relatively uniform environments (e.g. reclaimed fen and coastal marsh), while the densities of species and pairs can be four times as great where the habitat is most diversified. The influence of length and variety of hedgerow cover, and of cropping type, is discussed. The blackbird is the dominant farmland species in the central English Lowlands, usually with skylark and dunnock subdominant. Robin and chaffinch follow, rarely exceeding 12% of the passerine population. A comparison of the incidence and densities of various species is made between the central Midlands sample group and groups of census plots representing Eastern England, South and Southwest England, West Midlands and Wales, and Northern England. Some of the striking differences noted are thought to be due in part to climatic factors.

Zimmerman, Dale A. AGAPORNIS FISCHERI, LYBIUS GUIFSOBALITO, AND STIPHRORNIS ERYTHROTHORAX IN KENYA. Auk 84(4): 594-595. Oct. 1967. WR 129: 61
[Western N. Mex. Univ., Silver City.] "Fischer's lovebird, black-billed barbet, and the forest robin are added to the avifauna of Kenya."--Courtesy/ Paul A. Stewart.

BIRDS--POPULATIONS & FLUCTUATIONS

Bailey, R. S. AN INDEX OF BIRD POPULATION CHANGES ON FARMLAND. Bird Study 14(4): 195-209, 1 fig. Dec. 1967. WR 129: 61
Summary: The results of the Common Birds Census on sample areas of agricultural land between 1962 and 1966 are used as a basis for establishing an index of bird population fluctuations between the breeding season of each year. Tests for possible sources of bias due to inconsistency between observers, the gradual change in character of new censuses each year, and changes in analysis technique, indicate a high degree of consistency in the data. The annual changes each year are listed with 95% confidence limits and a population index, relative to 1966, is derived from them. Comparison of the changes in different regions suggests that the index is applicable to farmland in most of lowland England and possibly to the whole of Britain. Annual changes detected by the census may be as low as 5-10% in the commonest species. The population changes between 1962 and 1966 are briefly discussed. Most resident species have increased since the decrease in 1963. Summer visitors mostly show increases since 1962.

Danilov, N. N. [CENSUS TAKING OF NESTING BIRDS IN FOREST REGIONS AND FOREST-TUNDRA OF THE URALS.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71 (4): 34-41. 1966. [From Biol. Abstr. 48(21), 1967. In Russian with English summ.] WR 129: 61
[Urals Univ., Sverdlovsk, USSR.]

Graul, Walter D. POPULATION MOVEMENTS OF THE HARRIS' SPARROW AND TREE SPARROW IN EASTERN KANSAS. Southwestern Nat. 12(3): 303-310. 31 Oct. 1967. WR 129: 61
[Kans. State Coll., Emporia.] Abstract: A population movement study of the Harris' sparrow and tree sparrow was conducted in eastern Kansas from 11 October 1965 through 17 May 1966. Many Harris' sparrows and tree sparrows were migrants through November. The spring migration of the Harris' sparrow was gradual while the spring migration of the tree sparrow was abrupt. Both species followed general courses of movement, with the Harris' sparrow being restricted to wooded routes. The length of stay in a given area varied with individuals of both species. Both species exhibited an unstable flock structure. Movements of the Harris' sparrow were related to a combination of weather and food supply, and the tree sparrow movements were related to weather. Both species picked up grit daily from gravel roads. Sub-groups were noted within the Harris' sparrow population. Both species were specific in returning to a general wintering ground.

Linehan, John T. BANDING DELAWARE BIRDS. Del. Conserv. 11(4): 13-15, illus. Fall 1967. WR 129: 61
[Univ. Del., Newark.] Popular account of bird banding activities in Delaware.

Parslow, J. L. F. CHANGES IN STATUS AMONG BREEDING BIRDS IN BRITAIN AND IRELAND. (PART 5). British Birds 60(10): 396-404. Oct. 1967. WR 129: 61

Parslow, J. L. F. CHANGES IN STATUS AMONG BREEDING BIRDS IN BRITAIN AND IRELAND. (PART 6). British Birds 60(12): 493-508. Dec. 1967. WR 129: 61

BIRDS--POPULATIONS & FLUCTUATIONS--Continued

Wodzicki, Kazimierz. THE GANNETS AT CAPE KIDNAPPERS. 1. POPULATION CHANGES 1945-1964. Trans. Royal Soc. New Zealand, Zool. 8(14): 149-162. 1967. WR 129: 62
[DSIR, Wellington, New Zealand.]

Wodzicki, Kazimierz. THE GANNETS AT CAPE KIDNAPPERS. 2. DISPERSAL AND MOVEMENTS. Trans. Royal Soc. New Zealand, Zool. 9(2): 17-31, 5 figs. May 1967. WR 129: 62
[DSIR, Wellington, New Zealand.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Jordán, Romulo. THE PREDATION OF GUANO BIRDS ON THE PERUVIAN ANCHOVY (ENGRAULIS RINGENS JENYNS). Calif. Coop. Oceanic Fisheries Invest., Repts. 11: 105-109, 3 figs. Jan. 1967. WR 129: 62
[Inst. del Mandel Perú, Lima, Perú.] It is estimated that the guano birds [cormorants, gannets and pelicans] along the Peruvian coasts consumed between 1.8 and 2.8 million tons of anchovy during the period 1961-1963.

Koplin, James Ray. PREDATORY AND ENERGETIC RELATIONS OF WOODPECKERS TO THE ENGELMANN SPRUCE BEETLE. Ph.D. thesis, Colo. State Univ. 202 p. 1967. [From Dissertation Abstr. 28(5B), 1967.] WR 129: 62
Every aspect of the predator-prey system between woodpeckers and the Engelmann spruce beetle, except the number of larvae destroyed, conforms to general theory. The number of prey destroyed in this predator-prey system is higher than that known for any other system between vertebrate predators and invertebrate prey.

Kuroda, N. H. [A NOTE ON THE MASS MORTALITY OF PUFFINUS TENUIROSTRIS IN MIYAZAKI, KYUSHU.] Tori 18: 198-199. 1967. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 62

Schmidt, Egon. KATASTROPHE FÜR SCHWALBEN UND SEGLER INFOLGE EINER KALTEN WETTERPERIODE IN UNGARN. [A CATASTROPHE FOR SWALLOWS BECAUSE OF COLD WEATHER IN HUNGARY.] Vogelwarte 23(4): 312. 1966. [From Biol. Abstr. 48(18), 1967. In German.] WR 129: 62

Tordoff, Harrison B. AN INTERESTING CASE OF MORTALITY IN THE GOULDIAN FINCH. Auk 84(4): 604-605, 1 fig. Oct. 1967. WR 129: 62
[Univ. Mich., Ann Arbor.] One of the bird's claws pierced the nictitating membrane and was held there so the caged bird fell into a water pan and drowned.--Courtesy/ Paul A. Stewart.

BIRDS--PARASITES & DISEASES

Barrow, James H., Jr., Norman Kelker, and Harold Miller. THE TRANSMISSION OF LEUCOCYTOZOON SIMONDI TO BIRDS BY SIMULIUM RUGGLESI IN NORTHERN MICHIGAN. Am. Midland Nat. 79(1): 197-204. Jan. 1968. WR 129: 62
[Hiram Coll., Hiram, Ohio.] Abstract: The ornithophilic Simuliidae that feed on waterfowl were studied in northern Michigan. With the exception of one Cnephia sp., only Simulium rugglesi (Nicholson and Mickel) were collected attacking birds in Michigan during the study period from 15 April 1959 to 21 August 1962. The number of flies trapped in Michigan was never comparable to similar collections in Canada and Wisconsin. Nevertheless, a high incidence of Leucocytozoon infection was observed in both Cheboygan and Presque Isle Counties near streams, in contrast to substantially lower incidences of infection and fatality on the lake front at the University of Michigan Biological Station and at Riggsville (both in Cheboygan Co. and both away from streams). Host preference studies were made by exposing mallard ducks and 14 other species of birds. New host feeding records for S. rugglesi included black terns, herring gulls, black crown night herons, sandpipers, robin fledglings, and

blackbird fledglings. S. rugglesi preferred ducks over all other birds except gulls and blackbirds, colored ducks and ducklings over white ducklings and over goslings of all colors. They preferred colored ducklings and large white ducklings over goslings. S. rugglesi transmits Leucocytozoon among summer resident birds rather than the birds migrating through this region of Michigan. Epizootic conditions here are therefore significantly different from those in areas with larger and earlier appearing S. rugglesi populations farther north.

Barus, Vlastimil. NEMATODOS PARASITOS DE AVES EN CUBA. I. [NEMATODE PARASITES OF BIRDS IN CUBA. I.] Poeyana Inst. Biol. (Havana) Ser. A 22: 1-37, illus. 1966. [From Biol. Abstr. 48(16), 1967. In Spanish with English summ.] WR 129: 63
[Czech. Akad. Sci., Prague, Czechoslovakia.]

Biondi, E., and A. Schiavo. RICERCHE SULLA SENSIBILITA' DI UCCELLETTI VARI AL VIRUS DELLA BRONCHITE INFETTIVA AVIARIA. [INVESTIGATIONS INTO THE SUSCEPTIBILITY OF VARIOUS SMALL PASSERINE BIRDS TO THE VIRUS OF AVIAN INFECTIOUS BRONCHITIS.] Acta Med. Vet. 12(6): 537-547. Nov.-Dec. 1966. In Italian with summaries in French and English. WR 129: 63
Summary: The authors have studied the receptivity of various small birds to the virus of avian infectious bronchitis, and have shown that goldfinches, chaffinches (bullfinches), blackbirds, little mountain birds, sparrows, greenfinches and green linnets do not contract the disease and that it is impossible to recover the virus from them, not even after three hours from its instillation, which is the minimum time considered. On the contrary in the quail, although only in one case out of 15, evidence of bronchitis has been found and in the animals that had not contracted the disease it was possible to isolate the virus even after 12 days.

Bykhovskaya-Pavlovskaya, I. E., K. M. Ryzhikov, and I. A. Khotenovskii. [TREMATODES OF THE GENUS PSILOTREMA FROM ANSERIFORM BIRDS IN YAKUTIA.] Trudy Gelmintol. Lab. Akad. Nauk SSSR 17: 35-46. 1966. [From Biol. Abstr. 48(24), 1967, from Referat. Zhur., Biol., 1967, no. 1K142. Transl. of Russian abstr.] WR 129: 63

Carriker, Melbourne A., Jr. CARRIKER ON MALLOPHAGA POSTHUMOUS PAPERS, CATALOG OF FORMS DESCRIBED AS NEW, AND BIBLIOGRAPHY. US Natl. Museum Bull. ix + 150 p., illus. 1967. WR 129: 63
"Presented in this volume is a summary of more than 60 years of taxonomic investigations by a pioneering and world-recognized authority on neotropical Mallophaga who, in 82 publications, has added to the literature 6 families and subfamilies, 53 genera and subgenera, and 866 species and subspecies, the overwhelming majority of which are still recognized as valid."

Clark, G. W. THE OCCURRENCE OF HEMATOZOA IN ROBINS OF CENTRAL WASHINGTON. Bull. Wildl. Disease Assoc. 3(2): 69-71. Apr. 1967. WR 129: 63
[Central Wash. State Coll., Ellensburg.]

Dyl'ko, M. I. [BLOOD PARASITES OF BIRDS IN BYELORUSSIA.] Vyestsi Akad. Navuk Byelarus. SSR Syer. Byal. Navuk 2: 103-110. 1966. [From Biol. Abstr. 48(14), 1967. In Byelorussian with Russian summ.] WR 129: 63

Dymowska, Zofia, and Kazimierz Żukowski. PIERWOTNIAKI PASOŻYTNICZE W MATERIALE SEKCYJNYM Z PTAKÓW PUSZCZY KAMPINOSKIEJ. [PARASITIC PROTOZOA IN BIRDS OF THE KAMPINOS FOREST.] Wiad. Parazytol. 11(5): 477-481, illus. 1965. [From Biol. Abstr. 48(15), 1967. In Polish with English summ.] WR 129: 63

Faddoul, George P., Gordon W. Fellows, and James Baird. PASTEURELLOSIS IN WILD BIRDS IN MASSACHUSETTS. Avian Diseases 11(3): 413-418. Aug. 1967. WR 129: 64

[Univ. Mass., Waltham.] Summary: A septicemic Pasteurella infection was identified in 13 out of 248 consecutive wild bird consignments. Five sporadic cases occurred in robins, 3 in starlings, and 1 each in the following: common grackle, evening grosbeak, ring-necked pheasant, Baltimore oriole, and screech owl. Three more species of wild birds can be added to the list of avian hosts found naturally infected with P. multocida. These are the evening grosbeak, Baltimore oriole, and screech owl.

Friedmann, Herbert. ALLOXENIA IN THREE SYMPATRIC AFRICAN SPECIES OF CUCULUS. Proc. US Natl. Museum 124(3633): 1-14. 1967. WR 129: 64

[Los Angeles County Museum Nat. Hist., Los Angeles, Calif.] Alloxenia describes "the situation wherein two or more related species of parasites tend to use different species of hosts."

Huff, Clay G., and Alexander Wetmore. BLOOD PARASITES OF BIRDS COLLECTED IN FOUR SUCCESSIVE YEARS IN PANAMA. Bull. Wildl. Disease Assoc. 3(4): 178-181. Oct. 1967. WR 129: 64

[Naval Med. Res. Inst., Bethesda, Md.]

Kirmse, Peter. HOST SPECIFICITY AND LONG PERSISTENCE OF POX INFECTION IN THE FLICKER (COLAPTES AURATUS). Bull. Wildl. Disease Assoc. 3(1): 14-20, 5 figs. Jan. 1967. WR 129: 64

[Univ. Guelph, Guelph, Canada.]

Kluge, John P. AVIAN PARASITIC (SARCONEMA EURYCERCA) PANCARDITIS. Bull. Wildl. Disease Assoc. 3(3): 114-117, 5 figs. July 1967. WR 129: 64

[Natl. Animal Disease Lab., Ames, Iowa.]

Ramisz, Alojzy. ZALEŻNOŚĆ WYSTEPOWANIA PASOŻYTÓW KRWI PTAKÓW WRÓBLOWATYCH W POLSCE OD WEDRÓWEK SEZONOWYCH ZMIAN TEMPERATURY. [THE INFLUENCE OF MIGRATIONS OF THE HOST, AND SEASONAL DISTRIBUTION OF TEMPERATURE ON THE OCCURRENCE OF BLOOD PARASITES IN PASSERINE BIRDS OF POLAND.] Wiad. Parazytol. 11(5): 467-476, illus. 1965. [From Biol. Abstr. 48(15), 1967. In Polish with English summ.] WR 129: 64

[Coll. Agr., Wrocław, Poland.]

Ruschi, A. [SOME DISEASES OBSERVED IN HUMMINGBIRDS.] Bol. Mus. Biol. Prof. Mello-Leitão, Biol. 50: 1-5. 1967. [From Auk 84(4), 1967. In Portuguese with English summ.] WR 129: 64

Schwartz, L. Dwight. DISEASES OF GAMEBIRDS. Modern Game Breeding 3(11): 18-20. Sept. 1967. WR 129: 64

Summary: The bulk of the diseases of gamebirds is in three categories: (1) Non-infectious diseases from nutritional deficiencies or mismanagement; (2) Protozoan disease, against basically a management factor; and (3) Internal parasites. When these conditions are controlled through management, the threat from infectious diseases becomes one of little importance.

Smith, Douglas G. A SURVEY OF THE OCCURRENCE OF BLOOD PARASITES IN THE LOCAL BIRD POPULATION IN THE HIRAM, OHIO, AREA. Bull. Wildl. Disease Assoc. 3 (4): 185-186. Oct. 1967. WR 129: 64

[Univ. Colo., Boulder.]

Snoeyenbos, G. H., E. W. Morin, and D. K. Wetherbee. NATURALLY OCCURRING SALMONELLA IN "BLACKBIRDS" AND GULLS. Avian Diseases 11(4): 642-646. Nov. 1967. WR 129: 64

[Univ. Mass., Amherst.] "Salmonella were found in grackles, cowbirds, starlings, and gulls with sufficient frequency to suggest that these species may play a role in the epidemiology of this class of pathogens. No evidence was found that salmonellosis had a limiting effect on the population of these species."

Todd, Kenneth S., Jr., John V. Ernst, and Datus M. Hammond. PARASITES OF THE BLACK-BILLED MAGPIE, PICA PICA HUDSONIA (SABINE, 1823) FROM NORTHERN UTAH. Bull. Wildl. Disease Assoc. 3(3): 112-113. July 1967. WR 129: 65
[Univ. Ill., Urbana.]

QUAIL

Alford, R., D. Schultz, T. Thornton, and J. R. Howes. THE DEVELOPMENT OF VITAMIN DEFICIENCIES IN COTURNIX QUAIL. Poultry Sci. 46(5): 1227. Sept. 1967. WR 129: 65
[Auburn Univ., Auburn, Ala.] Abstract only of paper presented at the 56th Annual Meeting of the Poultry Science Association.

Colglazier, Merle L., Everett E. Wehr, Roy H. Burtner, and Louis M. Wiest. HALOXON AS AN ANTHELMINTIC AGAINST THE CROPWORM CAPILLARIA CONTORTA IN QUAIL. Avian Diseases 11(2): 257-260. May 1967. WR 129: 65
[Agr. Res. Serv., Beltsville, Md.] Summary: In controlled anthelmintic tests, Haloxon [O,O-di-(2 chlorethyl)-O-(3-chloro-4-methylcoumarin-7-yl) phosphate] was apparently 46 to 100% effective against Capillaria contorta in quail (Colinus virginianus) when administered at levels of 0.05 to 0.5% of the feed for 5 or 7 days. Results were best at the 0.075 to 0.5% levels. The highest concentration, however, was toxic, and one-fourth of the birds died. Single oral doses of the drug were not uniformly effective, and produced undesirable side effects, primarily ataxia.

Dixon, J. M., and J. H. Roberson. CASE REPORT: ABERRANT LARVAE OF PHYSALOPTERA SP. IN A QUAIL (COLINUS VIRGINIANUS). Avian Diseases 11(1): 41-44, 3 figs. Feb. 1967. WR 129: 65
[La. State Univ., Baton Rouge.]

DuBose, R. T. QUAIL BRONCHITIS. Bull. Wildl. Disease Assoc. 3(1): 10-13. Jan. 1967. WR 129: 65
[Va. Polytechnic Inst., Blacksburg.] Abstract: Quail bronchitis is an acute, contagious, respiratory disease of bobwhite quail. Tracheal rales, coughing, sneezing and mortality over 50% is often observed in young infected birds. Quail bronchitis virus infects chickens and turkeys with no signs of disease. A similar agent, called chicken embryo lethal orphan virus, has been isolated from embryonating chicken eggs. Quail experimentally infected with chicken embryo lethal orphan virus have developed bronchitis. Airborne, mechanical and contact transmission of quail bronchitis virus is suspected. Diagnosis is based on signs, lesions of the respiratory system, and isolation and serological identification of the virus. No specific treatment is known. Additional research on this disease, both as it affects captive quail and the wild or released quail, is needed.

Madden, David L., Wilson H. Henderson, and Harold E. Moses. CASE REPORT: ISOLATION OF MYCOPLASMA GALLISEPTICUM FROM BOBWHITE QUAIL (COLINUS VIRGINIANUS). Avian Diseases 11(3): 378-380. Aug. 1967. WR 129: 65
[Purdue Univ., Lafayette, Ind.] Summary: Mycoplasma gallisepticum was isolated from a commercially grown flock of bobwhite quail that had signs and lesions of chronic respiratory disease.

Mahmoud, T. H., and T. H. Coleman. A COMPARISON OF THE PROPORTION OF COMPONENT PARTS OF BOBWHITE AND COTURNIX EGGS. Poultry Sci. 46(5): 1168-1171. Sept. 1967. WR 129: 65
[Alexandria, Egypt.] It may be concluded that bobwhite eggs vary somewhat from coturnix eggs with respect to the proportion of component parts and that eggs of both of these species vary from chicken eggs in this respect.--From summ.

Marks, H. L., and J. V. Motta. THE INFLUENCE OF STORAGE LENGTH ON HATCHABILITY OF JAPANESE QUAIL EGGS. Poultry Sci. 46(5): 1288-1289. Sept. 1967. WR 129: 66

[Agr. Res. Sta., Beltsville, Md.] Abstract only of paper presented at the 56th Annual Meeting of the Poultry Science Association. "Results of 3 trials involving approximately 4400 eggs suggest that quail eggs can be held for a 2 week period prior to incubation with only a minor reduction in hatchability."

Vince, Margaret A., and S. H. Salter. RESPIRATION AND CLICKING IN QUAIL EMBRYOS. Nature 216(5115): 582-583, 7 figs. 11 Nov. 1967. WR 129: 66

[Univ. Cambridge, Cambridge, England.]

Weber, C. W., and B. L. Reid. PROTEIN REQUIREMENTS OF COTURNIX QUAIL TO FIVE WEEKS OF AGE. Poultry Sci. 46(5): 1190-1194, 1 fig. Sept. 1967. WR 129: 66

[Univ. Ariz., Tucson.]

PHEASANTS

Adams, A. W., A. J. Kahrs, and C. W. Deyoe. THE EFFECT OF LENGTH OF LIGHT PERIOD AND CAGE CONFINEMENT ON REPRODUCTIVE PERFORMANCE OF RINGNECK PHEASANTS. Poultry Sci. 46(5): 1226. Sept. 1967. WR 129: 66

[Kans. State Univ., Manhattan.] Abstract only of paper presented at the 56th Annual Meeting of the Poultry Science Association.

Creitz, J. R., and Nola N. Small. ESCHERICHIA COLI SEPTICEMIA IN PHEASANTS. Bull. Wildl. Disease Assoc. 3(2): 68-69. Apr. 1967. WR 129: 66

[U.S. Army Med. Lab., Ft. Meade, Md.]

Evans, Raymond D., and Carl W. Wolfe, Jr. EFFECTS OF NEST SEARCHING ON FATES OF PHEASANT NESTS. J. Wildl. Mgmt. 31(4): 754-759. Oct. 1967. WR 129: 66

[Mo. Dept. Conserv., West Plains.] Abstract: Data from 1,276 pheasant (Phasianus colchicus) nests were examined to determine the effect of nest searching on nest fate. Nests were divided into three groups: Group I, nests visited while a hen was present and flushed at least once; Group II, nests visited while a hen was present but never flushed; and Group III, nests terminated before discovery. Group II had the highest percent success (48.4). Group I had the highest percent abandonment (22.8). The percentage of nests lost through predation was lower at active nests than at terminated nests and was not increased by flushing. When selected data from Group I and II were combined, the resultant values approximated the corresponding values for Group III and indicated the nesting study had a negligible effect on the eventual fate of the nests.

Francis, William J. TEMPERATURE AND HUMIDITY CONDITIONS IN POTENTIAL PHEASANT NESTING HABITAT. J. Wildl. Mgmt. 32(1): 36-46, 4 figs. Jan. 1968. WR 129: 66

[Ill. Nat. Hist. Surv., Urbana.] Abstract: Measurements of temperature and humidity within different vegetative cover types in Illinois pheasant range were made, and absolute humidity parameters calculated. Preferred nesting cover of pheasants (Phasianus colchicus) has been found to be strip cover (such as fencerows and roadsides) and hayfields. Within these cover types summertime maximum temperatures remained lower than in other cover types. Saturation deficits were also lower in the preferred cover types than in other cover types, and were very high in cornfields and certain grasses. Success of pheasant reproduction appears to be related to placement of nests in vegetative types offering a favorable microclimate. Temperature and humidity variations among cover types exceed the mean geographical variation over a wide area.

Hinkson, R. S., Jr., A. G. Kese, and L. T. Smith. DIETARY CALCIUM REQUIREMENT OF THE RING-NECKED PHEASANT (PHASIANUS COLCHICUS). Poultry Sci. 46 (5): 1271-1272. Sept. 1967. WR 129: 67
[Univ. R.I., Kingston.] Abstract only of paper presented at the 56th Annual Meeting of the Poultry Science Association.

Kopischke, Earl D., and Robert A. Chesness. EFFECTS OF A SEVERE WINTER BLIZZARD ON PHEASANTS. Loon 39(3): 82-85, 8 figs. Sept. 1967. WR 129: 67
[Minn. Div. Game & Fish, Madelia.] Summary: An extremely severe blizzard struck much of Minnesota's pheasant range during March 17-19, 1965. The snowfall of up to 19 inches in some areas was accompanied by high northwest winds and below normal temperatures. Prestorm and poststorm counts of pheasants indicated a loss of about 55% in the Fairmount-Madelia area. The storm dramatically demonstrated the need for improved winter cover for pheasants in this region of Minnesota.

Mueller, C. F., and H. C. Seibert. WING AND TAIL MOLT IN THE REEVES PHEASANT. Ohio J. Sci. 66: 489-495. 1966. [From Auk 84(4), 1967.] WR 129: 67
Details provided on the chronology of ecdysis and endysis of remiges and rectrices. Significant findings include: retention of the tenth juvenal primary throughout first winter; presence of only 18 rectrices; rectricial molt centrifugal in juveniles, centripetal in adults; and molt of females later than males.

Wagner, Frederic H., and Allen W. Stokes. INDICES TO OVERWINTER SURVIVAL AND PRODUCTIVITY WITH IMPLICATIONS FOR POPULATION REGULATION IN PHEASANTS. J. Wildl. Mgmt. 32(1): 32-36, 4 figs. Jan. 1968. WR 129: 67
[Utah State Univ., Logan.] Abstract: Two indirect indices for measuring relative overwinter survival and annual productivity (reproduction plus spring-fall survival) are described for Wisconsin pheasants (Phasianus colchicus). These are applicable to any species in which indices of both spring and fall density are available. Overwinter survival is indicated by the ratio of spring population index to the density index of the previous fall. Productivity is measured by the ratio of fall density measurement to that of the spring population in the same year. These ratios, when correlated with fall and spring densities, indicate the degree to which overwinter survival and productivity are related to population density. Applied to statewide Wisconsin pheasant data (with spring hen indices based on crowing-cock counts X winter sex ratios, and cock-kill estimates serving as fall density indices), this approach suggests that overwinter mortality is not appreciably density dependent and spring densities are a function of the preceding fall levels. Productivity is inversely correlated with breeding density, but the variations occur within limits and fall density is a function of the spring breeding population.

Wentworth, Bernard C., E. Michael Pollack, and J. Robert Smyth, Jr. SEXING DAY-OLD PHEASANTS BY SEX-LINKED DOWN COLOR. J. Wildl. Mgmt. 31(4): 741-745, 1 fig. Oct. 1967. WR 129: 67
[Mass. Coop. Wildl. Res. Unit, Amherst.] Abstract: Pheasant propagation and management programs in different areas may emphasize one sex more than the other, so that to distinguish sex at an early age is advantageous. A method of determining the sex of day-old pheasant (Phasianus colchicus) chicks by utilizing the sex-linked mutation di and its wild-type allele, Di^+ is described. The cross of dilute cocks with wild-type hens produced blonde female and wild-type male chicks. All wild-type male chicks developed a normal wild-type juvenile and adult plumage. The blonde female chicks developed straw-colored juvenile and adult plumage. Progeny of pure dilute X dilute matings can also be sexed by differences in back down coloration, the males having a definite faint stripe in contrast to the even coloration of the female back down.

Anderson, Raymond K., and Frances Hamerstrom. HEN DECOYS AID IN TRAPPING COCK PRAIRIE CHICKENS WITH BOWNETS AND NOOSE CARPETS. J. Wildl. Mgmt. 31(4): 829-832, 2 figs. Oct. 1967. WR 129: 68

[Univ. Wis., Madison.] Abstract: Individual cock prairie chickens (Tympanuchus cupido) were successfully trapped in their territories by use of hen decoys posed in a copulating posture. The decoys elicited a sexual response in the cocks and thus lured them into position for trapping with either bownet or noose carpet. Eighteen cocks have been caught in this manner, plus 64 prairie chickens and four sharp-tails (Pedioecetes phasianellus) using bownets with corn as bait. Trap construction is described.

Bendell, J. F., and P. W. Elliott. BEHAVIOUR AND THE REGULATION OF NUMBERS IN BLUE GROUSE. Canadian Wildl. Serv. Rept. Ser. no. 4. 76 p., 15 figs. 1967. $1.00. With French summ. WR 129: 68

The importance of behavior to the regulation of numbers was studied in blue grouse (Dendragapus obscurus fuliginosus) on two summer ranges on Vancouver Island. During a 10-year period studies were made of dense and sparse populations that occupied cover which varied from open to dense. Grouse were shot to determine the effect of residents on recruitment. Grouse on the summer range apparently do not regulate their density. Territorial behavior appears to provide the undisputed use of area for successful mating. The rate of loss of young from autumn to spring is high in comparison to that of older grouse and may relate to a process of population regulation. Sexual and other age differences in behavior were noted. The mean annual death rate of grouse beyond a year of age appears low and constant at approximately 28%. Virtually all hens on the summer range appear to breed, and mean size of clutch is 6.22 ± 0.29 eggs. The proportion of yearlings in each population was the same each year although there were apparently fewer yearlings in the dense than in the sparse population. Hunting is apparently a negligible cause of mortality. The relevance of some of the findings to management is discussed.--From abstr.

Blank, T. H., T. R. E. Southwood, and D. J. Cross. THE ECOLOGY OF THE PARTRIDGE. I. OUTLINE OF POPULATION PROCESSES WITH A PARTICULAR REFERENCE TO CHICK MORTALITY AND NEST DENSITY. J. Animal Ecol. 36(3): 549-556, 4 figs. Oct. 1967. WR 129: 68

[Eley Game Advisory Sta., London, England.] Summary: Census data of a partridge population are analysed, chick mortality is shown to be the dominant population process causing fluctuations in the total annual mortality and hence the young to old ratio in September. Chick mortality and overwintering loss (mainly shooting) act in a density dependent manner. Other mortality factors, e.g. nesting success, were not density related nor were they significantly related to variations in total mortality. Nest density in the spring, which is an expression of the population level of a habitat is shown to be related to the conditions of the field boundary: incomplete hedges and grass tracks being favoured.

Blus, Lawrence J. SHARP-TAILED GROUSE RELATIONS TO A FOOD SOURCE NEAR A DANCING GROUND. Condor 69(5): 532-533. Sept.-Oct. 1967. WR 129: 68

[Patuxent Wildl. Res. Center, Laurel, Md.] Several sharp-tailed grouse (Pedioecetes phasianellus) moved their dancing sites from a barren hilltop to lower ground with more food.--Courtesy/ Paul A. Stewart.

Blus, Lawrence J. GOSHAWK PREDATION ON SHARP-TAILED GROUSE IN THE NEBRASKA SANDHILLS. Wilson Bull. 79(4): 449. Dec. 1967. WR 129: 68

[Patuxent Wildl. Res. Center, Laurel, Md.] Courtesy/ Paul A. Stewart.

Braun, Clait E., and William B. Willers. THE HELMINTH AND PROTOZOAN PARASITES OF NORTH AMERICAN GROUSE (FAMILY: TETRAONIDAE): A CHECKLIST. Avian Diseases 11(2): 170-187. May 1967. WR 129: 68

[Colo. State Univ., Fort Collins.] With a bibliography of 150 items.

Carr, Harold D. PRELIMINARY FINDINGS OF EFFECTS OF SAGEBRUSH CONTROL ON SAGE GROUSE. Colo. Coop. Wildl. Res. Unit, Tech. Pap. 5. 11 p. 15 Aug. 1966. WR 129: 69

Ellison, Laurence N. SEXING AND AGING ALASKAN SPRUCE GROUSE BY PLUMAGE. J. Wildl. Mgmt. 32(1): 12-16, 4 figs. Jan. 1968. WR 129: 69
[Univ. Calif., Berkeley.] Abstract: Spruce grouse (Canachites canadensis osgoodi) were accurately sexed by color pattern of either breast feathers or rectrices. The black breast feathers of males are tipped with white; the black breast feathers of females are barred with brown. Rectrices of males are black, lightly flecked with brown; rectrices of females are black, heavily barred with brown. In autumn, spruce grouse can be aged as juveniles (less than 1 year old) or adults (older than 1 year) with 91 to 100 percent accuracy, depending on the sex and age-class. Among juveniles, the outer primary is pointed and the tip of P9 is mottled and edged with brown. Among adults, the outer primary is rounded and the tip of P9 is only narrowly edged with brown.

Henderson, F. Robert, Forrest W. Brooks, Robert E. Wood, and Robert B. Dahlgren. SEXING OF PRAIRIE GROUSE BY CROWN FEATHER PATTERNS. J. Wildl. Mgmt. 31(4): 764-769, 2 figs. Oct. 1967. WR 129: 69
[S. Dak. Dept. Game, Fish & Parks, Kadoka.] Abstract: In sharp-tailed grouse (Pedioecetes phasianellus) and prairie chickens (Tympanuchus cupido) the pattern of crown feathers varies according to sex. Crown feathers of males are dark with a buff-colored edging; crown feathers of females have alternating buff-colored and dark cross-bars. Thirty observers averaged 93.0% in accuracy in 10,879 attempts to sex sharptails by means of crown feathers. On tail feathers accuracy averaged 87.0% among 26 observers in 4,191 tries. On prairie chickens 22 observers averaged 85.3% on crown feathers; on tail feathers they averaged 90.7%. One person was 98.2% accurate on sharptail crown feathers; another was 98.5% accurate on prairie chicken crown feathers. The use of sharptail crown feathers gave a larger sample and more nearly accurate sexing than the use of tail feathers. Pigmentation of the brow was intermediate in accuracy as a sex criterion in both species. Accuracy of crown and tail methods was improved when whole birds were examined rather than mounted feather specimens. High accuracy resulted at checking stations when agreement in any two of the three external characters (crown, brow, and tail) were used. All tests were made using materials from internally sexed birds. Patterns of crown feathers are useful for sexing grouse in field studies.

Holmes, J. C., and D. A. Boag. PARASITES OF THE MOUNTAIN GROUSE OF ALBERTA, CANADA. Wiad. Parazytol. 11(1-2 Suppl.): 255-256. 1965. [From Biol. Abstr. 48(8), 1967.] WR 129: 69
[Univ. Alberta, Edmonton, Canada.]

Jones, Robert E. A BOARD TO MEASURE COVER USED BY PRAIRIE GROUSE. J. Wildl. Mgmt. 32(1): 28-31, 1 fig. Jan. 1968. WR 129: 69
[Univ. Del., Newark.] Abstract: A cover board developed to measure the cover used by the Columbian sharp-tailed grouse (Pedioecetes phasianellus columbianus) consists of a frame of three 6.5 X 6.5-inch panels, divided into twenty-five 1.25-inch squares. This frame was placed in the grouse covert and read by counting visible squares, first at 6 inches above the ground (30 ft from the board) and second at 45° from horizontal. The device was tested against three other recognized cover evaluation techniques including height of vegetation and canopy cover plots. Analysis of variance tests indicated dancing covers were significantly different from the other covers tested by the grouse cover board at 45°, and that dancing cover and feeding covers read at 0° gave significantly different readings from one another and from cover used for other purposes.

Kupa, John Joseph. ECOLOGICAL STUDIES OF THE FEMALE RUFFED GROUSE (BONASA UMBELLUS L.) AT THE CLOQUET FOREST RESEARCH CENTER, MINNESOTA. Ph.D. thesis, Univ. Minn. 110 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 70

The study was concerned with the ecological relationships of the female ruffed grouse to forest habitats and the effects of forest alteration on these relationships. Marking techniques used included banding and dyeing of plumage.

Lewis, John B., Jerry D. McGowan, and Thomas S. Baskett. EVALUATING RUFFED GROUSE REINTRODUCTION IN MISSOURI. J. Wildl. Mgmt. 32(1): 17-28, 3 figs. Jan. 1968. WR 129: 70

[Mo. Dept. Conserv., Columbia.] Abstract: The ruffed grouse (Bonasa umbellus) was almost extirpated in Missouri in the early 1900's, probably because of habitat destruction through repeated burning and overgrazing. An attempt to reintroduce grouse during the 1940's failed. Since then, improved habitat conditions for forest game warranted other attempts. Wild-trapped birds from Ohio and Indiana were released in Missouri on the Ashland Wildlife Research Area, Boone County; and Daniel Boone Memorial Forest, Warren County. Thirty-nine grouse were released in 1959 at Ashland and 18 on the Boone Forest. Subsequent releases brought the Ashland Area total to 119 birds and the Boone Forest total to 143. For evaluating results of reintroduction, data were obtained during eight breeding seasons, 1960-67. Thirty-six drumming activity centers were found at Ashland, 1962-67, and 26 on the Daniel Boone Forest, 1961-67. Reproduction at Ashland was confirmed in 1963, 1964, 1965, and 1966 by catches of young grouse; and four unbanded drumming males, evidently progeny of the released birds, were trapped. Ruffed grouse appear to be established on both areas, but densities are low and occupancy of range beyond the release areas has been limited.

Osmolovskaya, V. I. [REASONS FOR CHANGES IN THE NUMBER OF TETRAONID BIRDS.] Bull. Moscow Obshch. Ispit. Prirody (Biol.) 71(5): 61-70. 1966. [From Biol. Abstr. 48(22), 1967. In Russian with English summ.] WR 129: 70

Cold springs in northern taiga. Land use changes in the more southern areas.

Phillips, Robert L. FALL AND WINTER FOOD HABITS OF RUFFED GROUSE IN NORTHERN UTAH. J. Wildl. Mgmt. 31(4): 827-829. Oct. 1967. WR 129: 70

[Iowa Conserv. Comm., Boone.] Abstract: The crops of 41 ruffed grouse (Bonasa umbellus) were collected during the fall hunting seasons of 1962-64 in northern Utah. An additional five crops were collected from birds shot during the winter months. Rose (Rosa woodsei) hips were the most important item in the fall diet, followed by aspen (Populus tremuloides) leaves and the fruit of meadow rue (Thalictrum fendleri). Grouse sign observed on the snow during the winter months showed grouse highly preferred the buds and twig tips of aspen and chokecherry (Prunus virginiana).

Pukinskii, Yu. B., and S. S. Roo. [BEHAVIOR OF THE CAPERCAILZIE (TETRAO UROGALLUS) DURING THE MATING PERIOD.] Vestn. Leningrad Univ. Ser. Biol. 21(4): 22-28, illus. 1966. [From Biol. Abstr. 48(22), 1967. In Russian with English summ.] WR 129: 70

Sandfort, Wayne. A DECADE OF CHUKAR HUNTING. Colo. Outdoors 16(6): 20-23, illus. Nov.-Dec. 1967. WR 129: 70

"During the first nine seasons, the program has gone into the 'black' in terms of birds harvested (30,000) compared to birds stocked (about 24,000 considering all introductions)." In 1958, 400 chukars were harvested while in 1966 the estimated chukar harvest was 9,332.

Schneegas, Edward R. SAGE GROUSE AND SAGEBRUSH CONTROL. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 270-274. 1967. WR 129: 70

[Inyo Natl. Forest, Bishop, Calif.] Fourteen procedures and recommendations are in use on the Inyo National Forest.

Silvy, Nova J., and Robert J. Robel. MIST NETS AND CANNON NETS COMPARED FOR CAPTURING PRAIRIE CHICKENS ON BOOMING GROUNDS. J. Wildl. Mgmt. 32(1): 175-178, 1 fig. Jan. 1968. WR 129: 71

[Kans. State Univ., Manhattan.] Abstract: Japanese mist nets proved useful in capturing prairie chickens (Tympanuchus cupido) on booming grounds in Kansas. Compared to cannon nets, mist nets had several advantages: (1) fewer recaptures, (2) some selectivity for females, (3) less disturbance of booming birds, and (4) lower acquisition and operational costs. Both kinds of nets were adversely affected by strong winds and inflicted a similar number of injuries to trapped birds. One disadvantage of mist nets is the fact that they can seldom capture more than one bird at a time.

Southwood, T. R. E. THE ECOLOGY OF THE PARTRIDGE. II. THE ROLE OF PRE-HATCHING INFLUENCES. J. Animal Ecol. 36(3): 557-562, 2 figs. Oct. 1967. WR 129: 71

[Imperial Coll., London S.W. 7, England.] Summary: 1. In wild populations of the partridge (Perdix perdix L.) in south England, pre-hatching factors, sex ratio, clutch size and percentage hatch, are not correlated with each other or, with the exception of the sex ratio, with chick survival which is the 'key factor' [Blank et al., WR 129: 68]. 2. Data from the artificial incubation of 26,416 eggs collected over 4 years from fourteen beats on an estate in south England showed that there was a tendency for some beats to have a higher percentage fertility than others. This was inversely related to the area of fallow in early spring and the average size of the fields. 3. Chick survival in captivity varies over the 4 years from 60% to 86% and was correlated with the percentage hatching. 4. It is considered that these observations on eggs and chicks reared in captivity have shown that many of the pre-hatching factors recognized by Jenkins et al. [WR 112: 51, WR 125: 45] in the red grouse also occur in the partridge; but their influence on the breeding success of protected populations in southern England is normally masked by the heavy chick mortality due to other immediate factors.

Watson, Adam. POPULATION CONTROL BY TERRITORIAL BEHAVIOR IN RED GROUSE. Nature 215(5107): 1274-1275. 16 Sept. 1967. WR 129: 71

[Univ. Aberdeen, Aberdeen, Scotland.] Experiments outlined in this paper indicated that territorial behavior in red grouse sets a limit to the size of the territorial population during the winter months and of subsequent breeding stock.

Weaver, Harold R., and William L. Haskell. AGE AND SEX DETERMINATION OF THE CHUKAR PARTRIDGE. J. Wildl. Mgmt. 32(1): 46-50. Jan. 1968. WR 129: 71

[Canadian Wildl. Serv., 10015 103 Ave., Edmonton, Alberta.] Abstract: A technique is described and a key provided for determining age and sex of the chukar partridge (Alectoris graeca) from wings during the fall hunting season. Captive birds were observed and measured at regular intervals throughout the summer-fall months and their measurements checked against similar measurements of wild birds which had been aged and sexed by internal examination. Chukars may be rapidly aged by the presence of mottled secondaries in young birds, the molting of the outer two primaries by adults, or the longer length of greater upper primary covert 9 in adults. The greater lengths of primaries 1 and 3 in males provide a valid and accurate method for determining sex of both juveniles and adults when a measuring board is used. This method may be applied from mid-September through December.

Weeden, Robert B., and Adam Watson. DETERMINING THE AGE OF ROCK PTARMIGAN IN ALASKA AND SCOTLAND. J. Wildl. Mgmt. 31(4): 825-826. Oct. 1967. WR 129: 71

[Alaska Dept. Fish & Game, Fairbanks.] Abstract: Up to the age of 12-15 months, when young rock ptarmigan (Lagopus mutus) shed their first set of white primaries, they can be distinguished from older birds by primary coloration. On old birds the second outermost primary has the same amount or less dark pigment than the third outermost primary; younger birds have more pigment on the second outermost. The method was tested with 607 banded or dissected birds in Alaska and Scotland, and was about 98% accurate for all sex and age groups combined.

Zwickel, Fred C. EARLY BEHAVIOR IN YOUNG BLUE GROUSE. Murrelet 48(1): 2-7. Jan.-Apr. 1967. WR 129: 72

[Univ. Alberta, Edmonton, Alberta, Canada.] Summary: Observations recorded while following broods of wild blue grouse in the summers of 1962 to 1965 are used for describing some of the group behavior of the hen and chicks. No chicks over 11 days of age were observed being brooded by the hen and few broods of over seven days of age were observed being brooded. Chicks can first fly at six to seven days of age and by two weeks of age regularly fly up to 60 meters. Chicks began to eat plant materials at approximately one day of age. They showed no sign of a feeding dependence on the hen. Voice seemed to play the most important role in maintaining the organization of the brood. Many behavior patterns of hens and chicks have considerable plasticity and it is suggested that this has a high survival value for both parent and offspring.

Zwickel, Fred C., and Charles F. Martinsen. DETERMINING AGE AND SEX OF FRANKLIN SPRUCE GROUSE BY TAILS ALONE. J. Wildl. Mgmt. 31(4): 760-763, 1 fig. Oct. 1967. WR 129: 72

[Univ. Alberta, Edmonton, Canada.] Abstract: Tails of Franklin spruce grouse (Canachites canadensis franklinii) can be used for determining both age and sex. Plumage patterns and other characteristics of tails as used for this purpose are described. Three biologists tested the validity of the criteria on a series of 42 tails and identified sexes with 100% accuracy and ages with 98% accuracy.

TURKEY

Smith, Walton A., and Bruce Browning. WILD TURKEY FOOD HABITS IN SAN LUIS OBISPO COUNTY, CALIFORNIA. Calif. Fish & Game 53(4): 246-253, 1 fig. Oct. 1967. WR 129: 72

Fifty-nine wild turkeys (Meleagris gallopavo) were collected in 1966 to study food habits and to assist in the appraisal of suitable release sites for turkeys transplanted from wild stock. The staple food item was wild oats through the year, supplemented by green grass and forb leafage in the spring and acorns in the fall. The results indicate that much potential habitat is available in the 9 million acres of woodland-grass and woodland-chaparral habitat in California, and that the limiting factor for wild turkeys probably is not food. However, competition for food and deferred grazing should be considered in wild turkey management. Adult male turkeys are significantly larger and females slightly smaller than turkeys from other states, but a larger sample is necessary to substantiate this. Other body measurements fall well within the range of those from birds of other states.

DOVES & PIGEONS

Bruder, R. H., and D. S. Lehrman. ROLE OF THE MATE IN THE ELICITATION OF HORMONE-INDUCED INCUBATION BEHAVIOUR IN THE RING DOVE. J. Comp. Physiol. Psychol. 63: 382-384. 1967. [From Ibis 109(4), 1967.] WR 129: 72

Cheney, Susan, and Philip W. Cheney. GROWTH RATE OF NESTLING DOVES. Murrelet 48(1): 14-16, 1 fig. Jan.-Apr. 1967. WR 129: 72

[223 North Garfield, Wenatchee, Wash.]

Dunmore, Ralph. PLUMAGE POLYMORPHISM IN A FERAL POPULATION OF THE ROCK PIGEON. Am. Midland Nat. 79(1): 1-7. Jan. 1968. WR 129: 72

[Box 65, Feura Bush, N.Y.] Abstract: A sample (n = 647) of feral rock pigeons collected in Syracuse, New York, between July, 1964 and February, 1965 revealed the presence of polymorphism of plumage color and wing pattern in the population. Five mutant phenotypes each comprised more than 2.5% of the sample, and apparently are being maintained by unknown selective advantages. Proportions of two common phenotypes changed significantly during the winter months. Estimates of mutant gene frequencies at five loci ranged from .037 to .239.

Ewing, S. A., J. L. West, and A. L. Malle. TETRAMERES SP. (NEMATODA: SPIRURIDAE) FOUND IN PIGEONS (COLUMBA LIVIA) IN KANSAS AND OKLAHOMA. Avian Diseases 11(3): 407-412, 3 figs. Aug. 1967. WR 129: 73
[Kans. State Univ., Manhattan.]

Harwood, D., and D. M. Vowles. FOREBRAIN STIMULATION AND FEEDING BEHAVIOUR IN THE RING DOVE (STREPTOPELIA RISORIA). J. Comp. Physiol. Psychol. 62: 388-396. 1966. [From Ibis 109(4), 1967.] WR 129: 73

Holcomb, Larry C. MOURNING DOVE EGG IN NESTS OF CATBIRD AND ROBIN. Wilson Bull. 79(4): 450-451. Dec. 1967. WR 129: 73
[Creighton Univ., Omaha, Nebr.] The mourning doves (Zenaidura macroura) used active nests of the other species.--Courtesy/ Paul A. Stewart.

Hutchison, J. B. INITIATION OF COURTSHIP BY HYPOTHALAMIC IMPLANTS OF TESTOSTERONE PROPIONATE IN CASTRATED DOVES (STREPTOPELIA RISORIA). Nature 216 (5115): 591-592, 1 fig. 11 Nov. 1967. WR 129: 73
[Univ. Cambridge, Cambridge, England.]

Jaskoski, Benedict J., and Jane Daniels Plank. RESEARCH NOTE: INCIDENCE OF ENDOPARASITISM IN A GROUP OF PIGEONS IN THE CHICAGO AREA. Avian Diseases 11 (3): 342-344. Aug. 1967. WR 129: 73
[Loyola Univ., Chicago, Ill.] Summary: A total of 116 fully grown pigeons were examined in two groups. Group I was collected in 1960 and examined for intestinal parasites. Group II was collected in 1961 and examined for trichomonads, trypanosomes, and blood parasites. The total percentage of intestinal parasitic infection in the group was found to be 17.85. Of 50 birds examined for trichomonads, all were found to have heavy oral populations of Trichomas gallinae. Of 60 birds examined for hematozoa, 31.85% were positive for Haemoproteus.

Lott, Dale, Susan D. Scholz, and D. S. Lehrman. EXTEROCEPTIVE STIMULATION OF THE REPRODUCTIVE SYSTEM OF THE FEMALE RING DOVE (STREPTOPELIA RISORIA) BY THE MATE AND BY THE COLONY MILIEU. Animal Behaviour 15(4): 433-437. Oct. 1967. WR 129: 73
[Rutgers Univ., Newark, N.J.] Summary: Female ring doves were exposed for 7 days to stimulation (through a glass partition) from intact or castrate males, either with or without ambient sounds from the breeding colony. Intact males induced more ovarian development than did castrate males, and more ovarian development was induced with sounds from the colony milieu than without, whether the female was with the intact or with the castrate male. It is concluded that, in the normal colony situation, stimuli from the mate and those from the surrounding colony environment combine in inducing ovarian development in female doves.

McLean, Robert George. CHEMICAL CONTROL OF REPRODUCTION IN CONFINED POPULATIONS OF PIGEONS (COLUMBA LIVIA). Ph.D. thesis, Pa. State Univ. vii + 71 p., 6 figs. Dec. 1966. WR 129: 73
Abstract: A chemosterilant that reduces the birth rate without affecting the status of the treated individuals should reduce the population and prevent compensation which would return the population to its original size. The chemosterilant, apholate (2, 2, 4, 4, 6, 6-hexakis (1-aziridinyl)-1, 3, 5, 2, 4, 6-triazatriphosphorine), was administered to confined pairs and populations of pigeons (Columba livia) to determine its inhibitory effect upon reproduction and the concomitant regulatory effect on population growth. The birds readily ate treated bait and suppression of behavior appeared insignificant. Fecundity and hatchability of eggs were reduced for confined pairs with one-day dosages of 20 mg to 101 mg of apholate per bird. A treatment of 140 mg per bird over a longer period completely inhibited reproduction for 3 months in confined populations by initial retardation of gametogenesis and subsequent interference of embryogenesis. Treated birds maintained breeding territories and followed normal behavioral patterns. The chemical inhibition of reproduction temporarily checked population growth and a second treatment provided increased control of the population.

Parker, S. NEW INFORMATION ON THE SOLOMON ISLANDS CROWNED PIGEON, MICROGOURA MEEKI ROTHSCHILD. Bull. British Ornithol. Club 87: 86-89. 1967. [From Ibis 109(4), 1967.] WR 129: 74

Regarded by Greenway as probably extinct, its continuing existence on Choiseul and other islands must on some new, circumstantial, evidence be admitted as a possibility.

Smith, Walton A. THE BAND-TAILED PIGEON IN CALIFORNIA. Calif. Fish & Game 54(1): 4-16. Jan. 1968. WR 129: 74

Abstract: The Pacific band-tailed pigeon (Columbia fasciata monilis) follows two main migration routes as it enters California from the north. One route is along the Coast Range, and the second is along the western slopes of the Sierra Nevada. The fall southward migration is usually complete by October, and the spring migration is complete by the end of June. Resident pigeon populations mix freely with migrating flocks in the foothill and mountain areas of central coastal California during the fall. A seasonal fluctuation in the diet of the pigeon was disclosed by the analysis of 157 pigeon crops and gizzards. The fall diet consisted primarily of mast, supplemented in the spring with cereal grains. Orchard fruit showed up heavily in the spring and summer diet. The berries and fruits from native trees and shrubs were important summer foods. The salt content of water samples from two springs regularly visited by pigeons was 12,406 and 2,025 mg/liter. The ions most prevalent were calcium, sodium, chlorine, and sulfate. Agricultural depredation on some crops by pigeons is recognized, and several methods of controlling damage to crops are discussed. During the period 1952 to 1958, 3,084 pigeons were banded, from which only 170 bands were recovered. About two-thirds of the bands were recovered in California. Destruction of habitat and hunting are the main factors limiting the band-tailed pigeon population. Weights of adult pigeons varied from 340 to 470 g for males and 280 to 440 g for females.

Steele, William S. THE PASSENGER PIGEON IN WELLINGTON COUNTY, ONTARIO. Canadian Field-Nat. 81(3): 172-174. July-Sept. 1967. WR 129: 74

[151 Glasgow Street North, Guelph, Ontario, Canada.]

Tomlinson, Roy E. REWARD BANDING TO DETERMINE REPORTING RATE OF RECOVERED MOURNING DOVE BANDS. J. Wildl. Mgmt. 32(1): 6-11. Jan. 1968. WR 129: 74

[Patuxent Wildl. Res. Center, Tucson, Ariz.] Abstract: Reward bands placed on the other leg of certain regularly banded immature mourning doves (Zenaidura macroura) were used to develop information on reporting rates of recovered dove bands. Reports from 15 widely separated sections of the United States showed considerable variation in recovery rate of doves both with and without reward bands. The overall percentages of banded doves that were reported as recovered were 9.69% for those with reward bands and 3.83% for controls. The band-reporting rate for states influenced by publicity was 66%; that for states not influenced was 32%.

Wehr, E. E., M. L. Colglazier, R. H. Burtner, and L. M. Wiest, Jr. METHYRIDINE, AN EFFECTIVE ANTHELMINTIC FOR INTESTINAL THREADWORM, CAPILLARIA OBSIGNATA, IN PIGEONS. Avian Diseases 11(2): 322-326. May 1967. WR 129: 74

[Colglazier: Agr. Res. Serv., Beltsville, Md.] Summary: Fifty feral pigeons naturally infected with the intestinal threadworm Capillaria obsignata, were given subcutaneous injections of methyridine as a 5% aqueous solution of the proprietary Promintic. Doses of 45 mg removed all of 1,613 threadworms from 17 birds; 35 mg removed 99% of 1,693 threadworms from 12 birds; and 23 mg removed 62% of 4,097 threadworms from 21 birds. Slight edema at the injection site beneath the wing and transient incoordination were observed in some of the birds at each dose level. The majority of the worms were passed within 24 hr of treatment. The 35-mg dose, which approximates 100 mg/kg of body weight, was considered optimal.

Wight, Howard M., Lytle H. Blankenship, and Roy E. Tomlinson. AGING MOURNING DOVES BY OUTER PRIMARY WEAR. J. Wildl. Mgmt. 31(4): 832-835, 1 fig. Oct. 1967. WR 129: 75

[Oreg. State Univ., Corvallis.] Abstract: Many immature mourning doves (Zenaidura macroura) cannot be aged by the conventional white-tipped primary covert method if molt has proceeded beyond the 7th primary. A new method of aging doves in this group is based on the presence (immature) or absence (adult) of a buff-colored fringe on the tips of the 9th and 10th primaries. Experienced biologists were nearly 100% accurate in aging wings of 100 known-age doves from eastern and midwestern states. The technique is not as reliable for doves from southwestern United States because of added feather wear, apparently from harsh vegetative and soil conditions.

Wunderle, Steve L. GROUND-ROOSTING BY MOURNING DOVES IN ILLINOIS. Trans. Ill. State Acad. Sci. 60(2): 204-205. 1967. [From Biol. Abstr. 48(23), 1967.] WR 129: 75

[Ill. Nat. Hist. Surv., Urbana.]

WATERFOWL

Anderson, David R., and Fred A. Glover. EFFECTS OF WATER MANIPULATION ON WATERFOWL PRODUCTION AND HABITAT. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 292-300, 1 fig. 1967. WR 129: 75

[Colo. Coop. Wildl. Res. Unit, Fort Collins.] Results of two-years' research show the experimental area, upon which water was applied early, produced nearly three times as many ducklings per acre as the control area. Present data indicate waterfowl production and use may be increased on managed areas by the application of water before the spring migration. Flood-irrigation on the study areas apparently tended to replace low-growing saltgrass communities with sedges, rushes, and other plant species that provided more desirable nesting habitat for waterfowl. It was believed that the increased production resulted from the early water rather than the changes in vegetation.--From summ.

Arneson, Paul D. THE EFFECTS OF WEATHER ON SPRING MIGRATION OF WATERFOWL NEAR ST. PAUL, MINNESOTA. Loon 39(3): 77-81, 2 figs. Sept. 1967. WR 129: 75

[Univ. Minn., St. Paul.]

Bagley, George E., Louis N. Locke, and Gordon T. Nightingale. LEAD POISONING IN CANADIAN GEESE IN DELAWARE. Avian Diseases 11(4): 601-608, 3 figs. Nov. 1967. WR 129: 75

[Patuxent Wildl. Res. Center, Laurel, Md.] "Delaware State waterfowl biologists have estimated that perhaps as many as 2,000-4,000 Canada geese succumbed to what appears to be lead poisoning during the winter of 1965-66. Such losses suggest that lead poisoning among Canada geese is probably of greater importance than the literature would indicate."

Bolen, Eric G. NESTING BOXES FOR BLACK-BELLIED TREE DUCKS. J. Wildl. Mgmt. 31(4): 794-797, 2 figs. Oct. 1967. WR 129: 75

[Texas Technol. Coll., Lubbock.] Abstract: Nesting boxes designed to accommodate black-bellied tree ducks (Dendrocygna autumnalis) were inspected for nesting success during 1963-65. Boxes without protection from terrestrial predators were gradually replaced by those with predator-proof sheetmetal guards. Natural cavity nests were additionally inspected beginning in 1962. Nests in predator-proof boxes were 77% successful whereas those in unprotected nesting boxes and natural cavities were 46 and 44% successful, respectively. If a minimum of 70% nesting success is desired for management purposes, nesting boxes must be provided with protection from predators.

Choate, Jerry S. FACTORS INFLUENCING NESTING SUCCESS OF EIDERS IN PENOBSCOT BAY, MAINE. J. Wildl. Mgmt. 31(4): 769-777, 1 fig. Oct. 1967. WR 129: 76

[1553 Crittenden St., Alden, N.Y.] Abstract: Histories were recorded for 1,030 American eider (Somateria mollissima dresseri) nests on five islands during two breeding seasons in Penobscot Bay, Maine. Nesting success was 39% in 1964 and 36% in 1965. Predation by gulls was responsible for most nest losses. Five factors were found to be related to nesting success: nesting cover, clutch size, partial predation, gull populations, and human disturbance. Nests in hardwood shrubs and cow parsnip (Heracleum maximum) had relatively high success while those in grasses and nightshade (Solanum dulcamara) were were much less successful. Nests with a complete clutch of fewer than four eggs were less successful than those with four or more eggs. When part of a clutch was lost to predators the chance of ultimate success of the remaining eggs was reduced. The number of nesting gulls per nesting eider on a given island was inversely related to the nesting success of the eiders on that island. Human disturbance was indirectly responsible for lowered nesting success.

Cornwell, George William. AN ECOLOGICAL RECONNAISSANCE OF HELMINTH POPULATIONS IN THE CANVASBACK (AYTHYA VALISINERIA). Ph.D. thesis, Univ. Mich. 288 p. 1966. [From Dissertation Abstr. 28(1B), 1967.] WR 129: 76

A survey of the helminthfauna of Aythya valisineria of varying sex, age and health from Manitoba marshes, potholes and molting lakes and the Lower Detroit River in Mich. The potential of helminths as a mortality factor was appraised. Possible relationships were examined between the canvasback's helminthfauna and environmental factors, host food habits, host health, and migration. An intensive review of the literature related to the ecology of helminth infections was included. Large populations of intestinal echinostomes, resulting from the ingestion of infective foods, are thought to have a potential for pathogenicity when accompanied by such unfavorable environmental stresses as low ambient temperatures, food shortages and water pollution.

Cowardin, Lewis M., and Kenneth F. Higgins. VISIBILITY, MOVEMENT, AND BEHAVIOR OF WATERFOWL ON A RIVER HABITAT IN MINNESOTA. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 301-315, 4 figs. 1967. WR 129: 76

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Summary: Numbered yellow patagial tags were placed on 58 young and adult mallards, blue-winged teal, and wood ducks. The work was done on a 1.7-mile section of the Mississippi River near Cass Lake, Minnesota. Birds were captured at night with the aid of lights mounted on an air-thrust boat. Seven brood censuses were conducted after the marked birds were released. After each census, visibility of each species was calculated by dividing the number of marked birds seen by the number of birds marked. Average visibility rates were: mallard--44%, blue-winged teal--65% and wood duck--35%. Population estimates for these three species were derived by the Petersen method. The basic assumptions of the estimating procedure are reviewed. A comparison of the observed and expected distribution of the number of sightings on individual birds gave evidence of loss of some marked birds and an abnormally high visibility rate for certain individuals. No differences in behavior of marked and unmarked birds were observed. Some broods that were released one-half mile from the point of capture returned to the point of capture, but broods that had been moved were observed over a larger portion of the river than those that were released at the point of capture. Marked birds rejoined their broods, and one hen that was captured and released at the point of capture on two occasions, rejoined the brood without loss of young. Direct evidence of brood mixing was obtained. No death or injury to the marked birds was observed, and, in general, the capture and marking techniques had no adverse effect on the population. Recreational use of the river for fishing had no apparent adverse effect on waterfowl. Movement of broods was minimal. During the course of study all but 7 of the 58 marked birds were accounted for, and as many as 9 observations were obtained for certain individuals.

Donaldson, Joseph. WINTER AND PASSAGE WILDFOWL AT LOUGH BEG, COUNTIES ANTRIM AND LONDONDERRY (DUCK, SWAN, GEESE). Irish Nat. J. 15(10): 283-286. 1967. [From Biol. Abstr. 48(18), 1967.] WR 129: 77
[N. Ireland Ornithol. Club, Belfast, North Ireland.]

Evans, Raymond D., and Carl W. Wolfe, Jr. WATERFOWL PRODUCTION IN THE RAINWATER BASIN AREA OF NEBRASKA. J. Wildl. Mgmt. 31(4): 788-794. Oct. 1967. WR 129: 77
[Mo. Dept. Conserv., West Plains.] Abstract: Waterfowl production was studied on a nine-section tract located in the rainwater basin area of south-central Nebraska. Of the 206 duck nests examined from 1958 through 1962, 62% occurred in roadsides and alfalfa. During the same period 52% of all nests were initiated by blue-winged teal (Anas discors). Nest success ranged from zero for the gadwall (Anas strepera) to 40% for the shoveler (Spatula clypeata) and averaged 11.2% for all species combined. Mortality for blue-winged teal ducklings averaged 51% from the time of leaving the nest to flight stage. Ducks produced on the study area decreased from 346 in 1958 to none in 1962 and averaged 158 per year.

Folz, S. D., and A. C. Todd. TRANSFER OF A PLASMODIUM FROM CANADA GEESE TO DOMESTICATED GEESE AND TURKEYS. Trans. Am. Microscop. Soc. 85(2): 279-283, illus. 1966. [From Biol. Abstr. 48(21), 1967.] WR 129: 77
[Univ. Wis., Madison.]

Fredrickson, Leigh Harry. SOME ASPECTS OF REPRODUCTIVE BEHAVIOR OF AMERICAN COOTS (FULICA AMERICANA). Ph.D. thesis, Iowa State Univ. 113 p. 1967. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 77

Hansen, Henry A., compiler. WATERFOWL STATUS REPORT 1967. US F&WS, Spec. Sci. Rept.--Wildl. no. 111. ii + 144 p. Dec. 1967. WR 129: 77
Data from winter surveys, breeding ground surveys and waterfowl kill surveys are reported. The groups of data are organized by flyways, from Pacific to Atlantic, with appendixes of tables to correspond.

Hartung, Rolf. ENERGY METABOLISM IN OIL-COVERED DUCKS. J. Wildl. Mgmt. 31 (4): 798-804, 10 figs. Oct. 1967. WR 129: 77
[Univ. Mich., Ann Arbor.] Abstract: The metabolic rates of ducks covered with known quantities of oils were measured indirectly by determining total quantities of exhaled carbon dioxide. Metabolic rates increased linearly with decreasing ambient temperatures. Regression analyses of the metabolic rate--temperature plots made it possible to assess the heat conductivities of normal and oiled duck plumage. A dose-response curve could be established for the effects of oiling on the estimated heat conductivity. The lower lethal temperature for oiled and normal ducks could not be determined and was less than -26 C. Mortalities at those temperatures appear to be delayed until fat reserves are used up. The usual reduction in food intake by oiled ducks in conjunction with sharply increased metabolic rates can result in an "accelerated starvation." Recovery toward normal metabolic rates after oiling was observed.

Havlin, Jiří. WING-TAGGING DUCKLINGS IN PIPPED EGGS. J. Wildl. Mgmt. 32 (1): 172-174, 3 figs. Jan. 1968. WR 129: 77
[Inst. Vert. Zool., Czech. Acad. Sci., Brno, Czechoslovakia.] Abstract: Based on 5 years' experience with wing-tagging ducklings and other birds, certain drawbacks of the currently used technique are pointed out and a new method is described, by which young in pipped eggs can be wing-tagged. The new method permits a greater proportion of the young to be banded, reduces losses at the time of hatching, and did not appear to affect survival of 110 tagged ducklings and coots.

Kikkawa, J., and Y. Yamashina. BREEDING OF INTRODUCED BLACK SWANS IN JAPAN. Emu 66(4): 377-381, 1 fig. June 1967. WR 129: 78
[Univ. Queensland, St. Lucia, Brisbane, Queensland, Australia.] Summary: The laying season of captive and semi-captive black swans in Japan suggests that apparent environmental cues which trigger or inhibit breeding in Australia are not operative for the introduced swans.

Kirmse, P. EXPERIMENTAL POX INFECTION IN WATERFOWL. Avian Diseases 11(2): 209-216, 5 figs. May 1967. WR 129: 78
[Ontario Veterinary Coll., Guelph, Canada.]

Lavery, H. J. THE MOVEMENT PATH OF SOME WATER-BIRDS IN NORTH QUEENSLAND. Queensland J. Agr. & Animal Sci. 23: 323-327, 1 fig. 1966. WR 129: 78
[Animal Health Sta., P.O. Box 1085, Townsville, 4810, Queensland, Australia.] Summary: Banding and recovery data support the existence of a prominent movement path from the eastern coast of Australia as far north as Cairns, thence to New Guinea by way of western Cape York Peninsula.

Lavery, H. J. STUDIES OF WATERFOWL (ANATIDAE) IN NORTH QUEENSLAND. 1. INTRODUCTION, SPECIES, DISTRIBUTION AND HABITAT. Queensland J. Agr. & Animal Sci. 23: 573-590, 8 figs. 1966. WR 129: 78
[Animal Health Sta., P.O. Box 1085, Townsville, 4810, Queensland, Australia.] Summary: Ecological studies of waterfowl in tropical Queensland were undertaken from 1958 to 1964. Fifteen of the 19 species of Anatidae indigenous to the Australian continent were sighted in north Queensland, mainly in the region between the two extremes of a limited lush wet coastal area and the widespread arid interior. Species were distributed as four groups: one common only on the coastal plains; one more common inland; one common in both regions; and one comprising vagrants in North Queensland. Ten habitat types, each with characteristic physiographical features, provided waterfowl habitat similar to that reported from other parts of Australia; the commonest and most widely used were swamps (early in the year) and lagoons (later, as a result of the marked decrease in shallow-water areas during the prolonged annual dry season). Some species characteristically used combinations of other habitat types in the course of a year.

Lavery, H. J. WHISTLING-DUCKS IN QUEENSLAND. Queensland Dept. Primary Industries, Div. Plant Industry Advisory Leaf1. no. 917. 8 p., 13 figs. 1967. [Reprint from Queensland Agr. J., May 1967.] WR 129: 78
[Animal Health Sta., P.O. Box 1085, Townsville, 4810, Queensland, Australia.] Distributions, habitats, habits, feeding, breeding, parasites and predators, and shooting and conservation of Dendrocygna arcuata australis and D. eytoni.

Locke, L. N., and G. E. Bagley. LEAD POISONING IN A BLACK DUCK. Bull. Wildl. Disease Assoc. 3(1): 37. Jan. 1967. WR 129: 78
[Patuxent Wildl. Res. Center, Laurel, Md.] "The present note documents the occurrence of acid-fast intranuclear inclusion bodies in the kidneys of a black duck (Anas rubripes) and is the first report of these diagnostic inclusion bodies in a field case of lead poisoning in a duck."

Locke, L. N., G. E. Bagley, and L. T. Young. THE INEFFECTIVENESS OF ACID-FAST INCLUSIONS IN DIAGNOSIS OF LEAD POISONING IN CANADA GEESE. Bull. Wildl. Disease Assoc. 3(4): 176. Oct. 1967. WR 129: 78
[Patuxent Wildl. Res. Center, Laurel, Md.] "It thus appears that birds, particularly Canada geese, receiving a large exposure to lead may succumb without the formation of intranuclear acid-fast inclusions in the kidneys. The authors believe that a period of exposure of several days is required before the bird can respond by producing these inclusions."

Locke, L. N., H. D. Irby, and G. E. Bagley. HISTOPATHOLOGY OF MALLARDS DOSED WITH LEAD AND SELECTED SUBSTITUTE SHOT. Bull. Wildl. Disease Assoc. 3(4): 143-147. Oct. 1967. WR 129: 79

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: The histopathological response of male farm mallards fed lead, three types of plastic-coated lead, two lead-magnesium alloys, iron, copper, zinc-coated iron, and molybdenum-coated iron shot was studied. Mallards fed lead, plastic-coated lead, or lead-magnesium alloy shot developed a similar pathological response, including the formation of acid-fast intranuclear inclusion bodies in the kidneys. Birds fed iron or molybdenum-coated iron shot developed hemosiderosis of the liver. Two of four mallards fed zinc-coated iron shot also developed hemosiderosis of the liver. No lesions were found in mallards fed copper shot.

Locke, L. N., and L. T. Young. ASPERGILLOSIS IN A COMMON LOON (GAVIA IMMER). Bull. Wildl. Disease Assoc. 3(1): 34-35. Jan. 1967. WR 129: 79

[Patuxent Wildl. Res. Center, Laurel, Md.]

McMahan, Craig A., and Ronny L. Fritz. MORTALITY TO DUCKS FROM TROTLINES IN LOWER LAGUNA MADRE, TEXAS. J. Wildl. Mgmt. 31(4): 783-787, 2 figs. Oct. 1967. WR 129: 79

[Texas Parks & Wildl. Dept., Corpus Christi.] Abstract: The mortality of ducks hooked on commercial fishery trotlines was studied in the Lower Laguna Madre of Texas. A sample area was selected and 20 trotlines, containing 2,000 hooks, were marked. Nineteen consecutive checks and ten random checks were made on the sample trotlines for hooked ducks. For each duck, the following data were recorded: species, sex and age, part of anatomy hooked, and chance for survival. Chance for survival classification was facilitated by observing penned specimens. The data from the 19 consecutive checks on the sample trotlines were extrapolated to an estimate of 196,800 total hooks being used in Lower Laguna Madre for the 90 days that ducks were in this area. Of an estimated 420,000 redhead ducks (Aythya americana), 21,914 were hooked by trotlines; 3,267 were killed, and 7,459 were classified as having poor chances for survival.

Reed, Austin, and J.-Guy Cousineau. EPIDEMICS INVOLVING THE COMMON EIDER (SOMATERIA MOLLISSIMA) AT ILE BLANCHE, QUEBEC. Natur. Can. 94(3): 327-334. 1967. [From Biol. Abstr. 48(24), 1967. In English with French summ.] WR 129: 79

[Dept. Tourism, Fish & Game, Quebec Wildl. Serv., Quebec, Canada.]

Rienecker, Warren C. A SUMMARY OF BAND RECOVERIES FROM REDHEADS (AYTHYA AMERICANA) BANDED IN NORTHEASTERN CALIFORNIA. Calif. Fish & Game 54(1): 17-26. Jan. 1968. WR 129: 79

Abstract: Population distribution and mortality rates were determined for 6,915 redheads banded in northeastern California from 1948 through 1963. California hunters harvest the majority of the redheads produced in northeastern California. The males range farther than the females and are apt to be found from Mexico to Canada and from coast to coast. The first year mortality rate from all causes for immature redheads was 78.7%. Adults showed an average mortality rate of 41%. Mortality other than hunting losses had a greater effect on the redhead than that recorded for the canvasback (Aythya valisineria) by other workers. An average direct band recovery rate of 15.5% was determined for immature redheads during years with an open hunting season on redheads. The data indicated a 4.7% recovery rate during years when the season was closed to redhead hunting. Although the band recovery rate dropped from 15.5% to 4.7% during the closed season, the mortality rate remained high (75.8%). Thus, the season closure had an effect on the band recovery rate but did little toward reducing the mortality on redheads.

Sherwood, Glen A. BEHAVIOR OF FAMILY GROUPS OF CANADA GEESE. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 340-355, 3 figs. 1967. WR 129: 80

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] It was found that: (1) a productive pair bond could be developed in a matter of hours in older, acquainted geese; (2) pair bonds were permanent so long as both members remained alive; (3) pairing took place on the nesting grounds; (4) ganders raised the brood alone following death of the goose; (5) yearlings frequently returned to the nesting grounds with their parents; (6) yearlings often rejoined their parents after the nesting season; (7) brood mates retained strong ties well into the second year; (8) about 75% of the two-year-old females nested and contributed about 33% of the hatch; (9) 2-year-old females attempted to nest close to their natal home; and (10) brood mixing occurred and 2-year-old females were most vulnerable in losing their goslings to older, aggressive pairs. Family groups of Canada geese contained from two to 21 members. The composition of such groups was influenced by mortality, brood mixing, yearlings rejoining parents and unions of two families. These assemblages represent a potential source of bias in determining productivity in Canada geese by fall counts of family groups. Such biases cannot be overcome by "average group count" methods currently in use.--From summ.

Sterling, Thomas, and Alex Dzubin. CANADA GOOSE MOLT MIGRATIONS TO THE NORTHWEST TERRITORIES. Trans. 32nd N. Am. Wildl. & Nat. Resources Conf. p. 355-373, 2 figs. 1967. WR 129: 80

[Ducks Unlimited, Saskatoon, Saskatchewan, Canada.] Summary: Molt migrations of large-type Canada geese, from their midcontinent breeding ranges to the subarctic tundras of the Northwest Territories, primarily along the Thelon-Back River basins, are documented. The major molting grounds were previously covered by post-glacial lacustrine inundation. Most geese are found molting between 15 June and 30 July and the estimated summer molting population may approach 30,000 Canada geese, in an area between 60°N to 66°N and 96°W to 106°W. The summer movement northward is restricted to portions of the subadult, nonbreeding and unsuccessful breeding components of various Mississippi and Central Flyway populations of B. c. maxima, B. c. moffitti and more rarely B. c. interior. Records of similar migrations for other races and populations are presented. Population segments use the same sites annually but in varying numbers. Molt migrations to isolated tundra areas are believed to have some survival value during this period of increased vulnerability. Some of the management and research implications that the phenomena presents are discussed. These are concerned with differential mortality rates, need for sanctuaries, significance of summer population mixing and potential supplementary aids to productivity measurement.

Stewart, Paul A. DIVING WOOD DUCK DUCKLINGS ENTANGLED IN FILAMENTOUS ALGAE. Condor 69(5): 531. Sept.-Oct. 1967. WR 129: 80

[USDA, Entomol. Res. Div., Oxford, N.C.] Several Aix sponsa presumably drowned after diving and becoming entangled in filamentous algae.--Auth. abstr.

Storer, Robert W. THE PATTERNS OF DOWNY GREBES. Condor 69(5): 469-478, 4 figs. Sept.-Oct. 1967. WR 129: 80

[Univ. Mich., Ann Arbor.] Summary: The patterns of downy young grebes may be divided into three groups: those with a bare crown spot, those with one or more rufous patches of down on the top of the head, and those in which the crown is striped with black and rufous buff. The first group contains eight species, which are best placed in two genera, Podiceps (seven species) and Aechmophorus (monotypic). The third group consists of two species, rolland and micropterum, which are placed in the genus Rollandia. The remaining species belong in the second group, which consists of the genera Podilymbus (two species) and Tachybaptus (three or four species), plus three species, dominicus, rufopectus, and (presumably) poliocephalus, whose relationships are not clear.--Courtesy/ Paul A. Stewart.

Szijj, J. ÖKOLOGISCHE UNTERSUCHUNGEN AN ENTENVÖGLER (ANATIDAE) DES ERMATINGER BECKENS (BODENSEE). [ECOLOGICAL INVESTIGATION OF DUCKS (ANATIDAE) ON LAKE CONSTANCE.] Vogelwarte 23: 24-71. 1965. [From Ibis 109(4), 1967. In German.] WR 129: 81

Taverner, J. H. WINTERING EIDERS IN ENGLAND DURING 1960-65. British Birds 60(12): 509-515. Dec. 1967. WR 129: 81

Summary: The numbers of eiders Somateria mollissima wintering in England followed a markedly fluctuating pattern during the years 1959/60 to 1965/66. These fluctuations are described and possible causes of the decline in the winters of 1963/64 and 1964/65 discussed. It is thought that the main cause was a large decrease in the numbers breeding in the Dutch Frisian Islands, apparently as a result of poisoning.

Timken, Richard L. CANVASBACK MALE PARTICIPATING IN A REDHEAD COURTSHIP PARTY. Auk 84(4): 588. Oct. 1967. WR 129: 81

[Univ. S. Dak., Vermillion.] Courtesy/ Paul A. Stewart.

Webster, Clark G., and Francis M. Uhler. IMPROVED NEST STRUCTURES FOR WOOD DUCKS. Modern Game Breeding 3(11): 9-13, 28-36, 8 figs. Sept. 1967. WR 129: 81

[Remington Farms, Chestertown, Md.] Detailed instructions for the construction and use of effective predator-proof wood duck nest boxes.

Weller, Milton W. COURTSHIP OF THE REDHEAD (AYTHYA AMERICANA). Auk 84(4): 544-559, 10 figs. Oct. 1967. WR 129: 81

[Iowa State Univ., Ames.] Displays of the redhead are described and illustrated. Females are aggressive and maintain a position near a preferred male. Courtship occurs on wintering, migration, and nesting areas. Intensive courtship may incorporate diving and aerial chases resulting from the female's efforts to escape pursuing males. The courtships of the redhead and canvasback (Aythya valisineria) are much alike, but no hybridization has been reported in nature.--From summ. Courtesy/ Paul A. Stewart.

Woolfenden, Glen E. SELECTION FOR A DELAYED SIMULTANEOUS WING MOLT IN LOONS (GAVIIDAE). Wilson Bull. 79(4): 416-420. Dec. 1967. WR 129: 81

[Univ. South Fla., Tampa.] Loons (Gavia) cannot have a gradual wing molt for structural reasons, and they cannot have a simultaneous wing molt when on their breeding lakes for behavioral and climatological reasons. The only remaining possibility is a simultaneous molt of the remiges following the fall migration. Additional selective factors have caused further delay until finally the development of new flight feathers immediately precedes spring migration.--From summ. Courtesy/ Paul A. Stewart.

CRANES, RAILS, SHOREBIRDS

Belopol'skaya, M. M. [TREMATODE PARASITES OF THE WHITE SEA SHOREBIRDS.] Trudy Gelmintol. Lab. Akad. Nauk SSSR 17: 9-18. 1966. [From Biol. Abstr. 48 (24), 1967, from Referat. Zhur., Biol., 1967, no. 1K141. Transl. of Russian abstr.] WR 129: 81

One hundred four individuals of 17 spp. of Charadriiform birds were examined. Eighty-one (77.8% of the total number) were found to have 25 spp. of trematodes belonging to 12 families.

Bongiorno, Salvatore Federico. SUBSTRATE AND THE DISTRIBUTION OF LAUGHING GULL (LARUS ATRICILLA) NESTS. Ph.D. thesis, Rutgers Univ. 138 p. 1967. [From Dissertation Abstr. 28(5B), 1967.] WR 129: 81

Brown, R. G. B. BREEDING SUCCESS AND POPULATION GROWTH IN A COLONY OF HERRING AND LESSER BLACK-BACKED GULLS LARUS ARGENTATUS AND L. FUSCUS. Ibis 109(4): 502-515. Oct. 1967. WR 129: 81

[Canadian Wildl. Serv., Post Office Bldg., Aurora, Ontario.]

Dare, P. J. THE BREEDING AND WINTERING POPULATIONS OF THE OYSTERCATCHER (HAEMATOPUS OSTRALEGUS LINN.) IN THE BRITISH ISLES. Fishery Invest., London Ser. II 25(5). 69 p. 1966. [From Ibis 109(4), 1967.] WR 129: 82

De Vlaming, Victor L. REGURGITATION BY KILLDEER AS A POSSIBLE MEANS OF DISPERSAL FOR SEEDS AND AQUATIC ORGANISMS. Wilson Bull. 79(4): 449-450. Dec. 1967. WR 129: 82
[Univ. Calif., Berkeley.] Viable seeds were disgorged by Charadrius vociferus within an hour after the birds ate large seeds or a large meal.--Courtesy/ Paul A. Stewart.

Dott, H. E. M. THREE FULMARS APPARENTLY SHARING PARENTAL DUTIES. British Birds 60(12): 521-522. Dec. 1967. WR 129: 82
"Fulmarus glacialis."

Evans, Roger Malcolm. THE DEVELOPMENT OF MOBILITY AND APPROACH RESPONSES IN YOUNG RING-BILLED GULLS. Ph.D. thesis, Univ. Wis. 137 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 82
The development of approach responses was studied in relation to the mobility and dispersal of broods in colonies of ring-billed gulls (Larus delawarensis). Measurements of brood mobility were obtained by plotting movements of broods on maps from a blind. The development of approach responses was examined experimentally in the field and in the laboratory. Studies were designed to test the relative effectiveness of selected visual and auditory stimuli by varying the external stimulus conditions and impairing the sensory capacities of chicks. Effects on approach responses of early social experience and food reinforcement were studied by varying the timing and extent of such experience. It was concluded that approach responses to social companions provide the major means of control of brood movements. By reducing wandering, they also assure parental care and safety for the chicks. These early approach responses thus play a major role in adapting semi-precocial gulls to their colonial environment.

Funderburg, J. B. PRENUPTIAL COURTSHIP IN WINTERING SHOREBIRDS. Fla. Nat. 40: 65-66. 1967. [From Auk 84(4), 1967.] WR 129: 82

Funderburg, J. B. SYMBIOTIC FEEDING BEHAVIOR OF LESSER YELLOWLEGS AND BLACK-NECKED STILTS. Fla. Nat. 40: 66. 1967. [From Auk 84(4), 1967.] WR 129: 82

Gurr, L. INTERBREEDING OF LARUS NOVAEHOLLANDIAE SCOPULINUS AND LARUS BULLERI IN THE WILD IN NEW ZEALAND. Ibis 109(4): 552-555 + 4 pls. Oct. 1967. WR 129: 82
[Massey Univ., Palmerston North, New Zealand.]

Harty, Stephen T. THE DISCOVERY OF THE BLACK RAIL (LATERALLUS JAMAICENSIS) IN PANAMA AND THE FIRST BREEDING RECORD. Cassinia 48: 19-20, illus. 1964. [From Biol. Abstr. 48(21), 1967.] WR 129: 82
[450 Timerline Drive, Rancocas Woods, N.J.]

Heard, Richard Willis, III. SOME HELMINTH PARASITES OF THE CLAPPER RAIL, RALLUS LONGIROSTRIS BODDAERT, FROM THE ATLANTIC AND GULF COASTS OF THE UNITED STATES. M.S. thesis, Univ. Ga. iv + 32 p. 1967. WR 129: 82
During the present survey 179 clapper rails from thirteen collecting areas on the Atlantic and Gulf coasts of the United States were searched for helminth parasites. Fifty-six distinct species of these parasites were recovered.--From summ.

Johns, Jerry Everett. EXPERIMENTS IN HORMONAL CONTROL OF SEX REVERSAL IN PHALAROPES. Ph.D. thesis, Univ. Mont. 18 p. 1965. [From Dissertation Abstr. 28(1B), 1967.] WR 129: 82

Maclean, G. L. THE BREEDING BIOLOGY AND BEHAVIOUR OF THE DOUBLE-BANDED COURSER RHINOPTILUS AFRICANUS (TEMMINCK). Ibis 109(4): 556-569, 4 figs. Oct. 1967. WR 129: 83
[Rhodes Univ., Grahamstown, South Africa.]

Merilees, William J. SPOTTED SANDPIPER CHICKS RETURNING TO THE NEST: Canadian Field-Nat. 81(3): 223. July-Sept. 1967. WR 129: 83
[1836 West 62nd Ave., Vancouver, British Columbia, Canada.]

Owen, Brenig A. LESSER BLACK-BACKED GULLS NESTING ON WAREHOUSE ROOFS INLAND. British Birds 60(10): 416. Oct. 1967. WR 129: 83

Papadopol, Aurel. [THE CHARADRIIFORMES OF ROMANIA, SYSTEMATIC, ZOOGEOGRAPHICAL AND ECOLOGICAL CONSIDERATIONS.] Trav. Mus. Hist. Nat. Grigore Antipa 6: 227-247, illus. 1966. [From Biol. Abstr. 48(20), 1967. In French with Romanian and Russian summ.] WR 129: 83
There are 64 spp. of charadriiformes in Romania.

Schreiber, Ralph W. ROOSTING BEHAVIOR OF THE HERRING GULL IN CENTRAL MAINE. Wilson Bull. 79(4): 421-431, 6 figs. Dec. 1967. WR 129: 83
[Smithsonian Inst. Pacific Project, Washington, D.C.] The summer roost was on rocks in the Penobscot River; the fall roost was five miles from the summer roost on Pushaw Lake. The summer roost contained a maximum of 400 gulls and the fall roost 4000. The lake roost was abandoned when ice formed on the surface. During the summer the gulls went to roost earlier relative to sunset than during the fall. During the fall most birds arrived at the roost when light intensities were less than 300 foot candles, with peak movement between 10 and 115 foot candles. During the summer the rate of arrival was the same during cloudy and clear weather, but during the fall more birds arrived early on cloudy than on clear days. Wind velocity, wind direction, and temperature did not have a direct effect on roosting behavior. Social interaction and disturbance at feeding and loafing areas may hasten roosting flights.--From summ. Courtesy/ Paul A. Stewart.

Soikkeli, Martti. BREEDING CYCLE AND POPULATION DYNAMICS IN THE DUNLIN (CALIDRIS ALPINA). Ann. Zool. Fenn. 4: 158-198, 10 figs. 1967. WR 129: 83
[Univ. Turku, Turku, Finland.] Major topics of discussion: breeding cycle, site-tenacity and mate-faithfulness, mortality rate of adult birds, reproductive rate, and population dynamics and control.

Threlfall, William. DISEASES AND PATHOLOGICAL CONDITIONS OF THE HERRING GULL (LARUS ARGENTATUS PONTOPP.) EXCLUDING HELMINTH INFESTATIONS. Bull. Wildl. Disease Assoc. 3(2): 62-67. Apr. 1967. WR 129: 83
[Memorial Univ. Newfoundland, St. John's, Canada.]

HAWKS & OWLS

Ames, Peter L. OVERLAPPING NESTINGS BY A PAIR OF BARN OWLS. Wilson Bull. 79(4): 451-452. Dec. 1967. WR 129: 83
[Univ. Calif., Berkeley.] A pair of barnowls (Tyto alba) may have concurrently had a nest with young large enough for banding and (eight feet above) a clutch of partly incubated eggs.--Courtesy/ Paul A. Stewart.

Barlow, Jon C., and Roy Johnson. CURRENT STATUS OF THE ELF OWL IN THE SOUTHWESTERN UNITED STATES. Southwestern Nat. 12(3): 331-332. 31 Oct. 1967. WR 129: 83
[Royal Ontario Museum, Toronto, Ontario, Canada.]

Brodie, Edmund D., Jr., and Chris Maser. ANALYSIS OF GREAT HORNED OWL PELLETS FROM DESCHUTES COUNTY, OREGON. Murrelet 48(1): 11-12. Jan.-Apr. 1967. WR 129: 83
[Oreg. State Univ., Corvallis.] "Bubo virginianus."

Fellowes, E. C. KESTREL AND BARN OWL SHARING ENTRANCE TO NEST-SITES. British Birds 60(12): 522-523. Dec. 1967. WR 129: 84

Fleetwood, Raymond J., and John L. Hamilton. OCCURRENCE AND NESTING OF THE HOOK-BILLED KITE (CHONDROHIERAX UNCINATUS) IN TEXAS. Auk 84(4): 598-601, 1 fig. Oct. 1967. WR 129: 84
[Santa Ana Natl. Wildl. Refuge, Rt. 1, Box 202-A, Alamo, Texas.] A new species for the United States.--Courtesy/ Paul A. Stewart.

Funderburg, J. B. "FOOT-RESTING" BEHAVIOR OF A RED-SHOULDERED HAWK (BUTEO LINEATUS). Fla. Nat. 40: 65. 1967. [From Auk 84(4), 1967.] WR 129: 84

Funderburg, J. B. RED-SHOULDERED HAWK (BUTEO LINEATUS) TRAPPED BY SPANISH MOSS. Fla. Nat. 40: 65. 1967. [From Auk 84(4), 1967.] WR 129: 84

Glue, D. E. PREY TAKEN BY THE BARN OWL IN ENGLAND AND WALES. Bird Study 14(3): 169-183, 1 fig. Sept. 1967. WR 129: 84
[Univ. London, London, England.]

Griffiths, M. E. THE POPULATION DENSITY OF THE KESTREL IN LEICESTERSHIRE. Bird Study 14(3): 184-190, 3 figs. Sept. 1967. WR 129: 84

Helmboldt, C. F. AN UNIDENTIFIED PROTOZOAN PARASITE IN THE KIDNEY OF THE GREAT-HORNED OWL (BUBO VIRGINIANUS). Bull. Wildl. Disease Assoc. 3(1): 23-25, 4 figs. Jan. 1967. WR 129: 84
[Univ. Conn., Storrs.] Abstract: A protozoan parasite resembling Klossiella sp. was found in the collecting tubuli of the kidney from a great-horned owl (Bubo virginianus).

Howell, Joseph C., and George M. Heinzman. COMPARISON OF NESTING SITES OF BALD EAGLES IN CENTRAL FLORIDA FROM 1930 TO 1965. Auk 84(4): 602-603. Oct. 1967. WR 129: 84
[Univ. Tenn., Knoxville.] Fourteen sites occupied by bald eagles (Haliaeetus leucocephalus) in 1930-38 were still occupied during the 1962-63 season.--Courtesy/ Paul A. Stewart.

Lagerwall, P. E. [OUR FRIENDS THE OWLS.] Skogsbruket 37(2): 47-49. 1967. [From Bibliog. Agr. 31(11), 1967. In Swedish.] WR 129: 84
Types of owls in Finland and their importance in destroying rodent pests in forests.

Mathisen, John E. EFFECTS OF HUMAN DISTURBANCE ON NESTING OF BALD EAGLES. J. Wildl. Mgmt. 32(1): 1-6, 1 fig. Jan. 1968. WR 129: 84
[Chippewa Natl. Forest, Cass Lake, Minn.] Abstract: Known nests of bald eagles (Haliaeetus leucocephalus) on the Chippewa National Forest were divided into three groups reflecting degrees of isolation, called wilderness factors. The eagle nests under consideration were occupied 182 times from 1963-66. The rate of occupancy was essentially the same for each group. Nests in the high wilderness-factor category were successful 54% of the time, in the moderate category 57%, and in the low category 48%. None of these differences are statistically significant, indicating that human activity at levels existing on the Chippewa is not an important source of disturbance and has no measurable effect on nesting success or nest occupancy. Most human activity around nest sites in this region occurred during the latter part of the nesting cycle when family ties were strongest. Habitat modified by timber management in the immediate vicinity of nest sites did not appear to affect nesting activity. Failure of eagles to produce young on the Chippewa must be related to some factor other than human disturbance.

Mueller, Helmut C., and Daniel D. Berger. FALL MIGRATION OF SHARP-SHINNED HAWKS. Wilson Bull. 79(4): 397-415, 7 figs. Dec. 1967. WR 129: 85

[Univ. N.C., Chapel Hill.] There were found to be two peaks in the fall migration of sharp-shinned hawks (Accipiter striatus) in Wis., one peak in mid-September and one in mid-October. The first peak was composed chiefly of immature birds, the second chiefly of adults. Ninety-three percent of the birds were observed on days with westerly winds, 72% were recorded within two days of the passage of a cold front, 69% were recorded on days when the area temperature had dropped during the previous 24 hours, and 84% were recorded on days when the sun was shining at least one-half of the time between sunrise and sunset. The distribution of recoveries of banded sharp-shinned hawks suggests that the birds head approximately southward, drift eastward in the north and central parts of the United States, and drift westward in the states bordering the Gulf of Mexico.--Courtesy/ Paul A. Stewart.

Payne, R. ACOUSTIC ORIENTATION OF PREY BY THE BARN OWL TYTO ALBA. Charles Walcott Div. Engineering & Applied Physics (Harvard Univ.), Tech. Rept. no. 1. 67 p. 1961. [From Ibis 109(4), 1967.] WR 129: 85

Barn owls can locate prey in total darkness using hearing alone, with an accuracy of about one degree in both the vertical and horizontal planes. A theory is presented to explain how a barn owl might localize the position of a sound source by moving its head until the intensity of all frequencies comprising a complex sound is maximal in both ears.

Ratcliffe, D. A. THE PEREGRINE SITUATION IN GREAT BRITAIN 1965-66. Bird Study 14(4): 238-246. Dec. 1967. WR 129: 85

[Monks Wood Expt1. Sta., Abbots Ripton, Huntingdon, England.] Summary: A sample census of about one-third of the peregrine breeding population of Great Britain in 1965 and 1966 indicates that there has been no significant change in proportion of occupied territories or breeding success of remaining birds during this period. Comparison with earlier data suggests that the peregrine decline ceased after 1963, and that the population has since remained relatively stable, with occupied territories at about 40% of the pre-war level and breeding success (pairs rearing young) varying between about 13 and 16% of the maximum possible level (former mean annual number of pairs). Breeding success may have improved marginally after 1963 on the national scale, and more significantly in Southern Scotland and Northern Ireland. The geographical pattern is unchanged, with population level, breeding success and brood size lowest in England and Wales, and highest in the South and East Highlands of Scotland. Analysis of peregrine eggs gives no evidence of a decrease in contamination by any organo-chlorine residue since 1964. Eggs from Northern England and Southern Scotland were more heavily contaminated than those from the South and East Highlands during the period 1963-66, though the difference lies mainly in the DDE component. Failure of young peregrines from successful eyries to build up the breeding population of depleted areas is probably a reflection primarily of the lack of improvement in the adverse factor which initiated decline.

Robards, Fred C. CAPTURE, HANDLING AND BANDING OF BALD EAGLES. [USDI, Bur. Sport Fisheries & Wildl. (Juneau, Alaska).] i + 25 p., illus. [1967.] WR 129: 85

Robards, Fred C., and James G. King. NESTING AND PRODUCTIVITY OF BALD EAGLES SOUTHEAST ALASKA--1966. USDI, Bur. Sport Fisheries & Wildl. (Juneau, Alaska). i + 14 p., illus. + 16 figs. [1967.] WR 129: 85

A study of the bald eagle (Haliaeetus leucocephalus) in parts of southeast Alaska was made from March 15 to July 7, 1966. It was found that all nests are located within 200 yards of salt water or along the course of major mainland rivers. A primary study area consisting of Admiralty Island and adjacent islets was segmented into 86 plots containing ten miles of beach line each. Ten plots were randomly selected for intensive study. Data on nest location, construction, frequency and productivity were recorded. Plots near Juneau and in the Chilkat

River valley were also examined. Expanded figures for total production on the Admiralty Island study area at the 95% confidence level are: active nests, 456 ± 48; eggs produced, 894 ± 94; young hatched, 734 ± 77; young surviving to point of fledging, 648 ± 69. Fairly similar production was indicated along the Chilkat River.--From abstr.

Schnell, Gary D. POPULATION FLUCTUATIONS, SPATIAL DISTRIBUTION, AND FOOD HABITS OF ROUGH-LEGGED HAWKS IN ILLINOIS. Kans. Ornithol. Soc. Bull. 18(4): 21-28, 3 figs. Dec. 1967. WR 129: 86
[Univ. Kans., Lawrence.]

Stieglitz, Walter O., and Richard L. Thompson. STATUS AND LIFE HISTORY OF THE EVERGLADE KITE IN THE UNITED STATES. US F&WS, Spec. Sci. Rept.--Wildl. no. 109. ii + 21 p., 12 figs. Nov. 1967. For sale by Supt. Documents, GPO, at 20¢. WR 129: 86
Abstract: The Florida everglade kite, Rostrhamus sociabilis plumbeus, though reduced in numbers to hardly more than 20, still has a chance to survive. This northernmost subspecies is found only in southern Florida where its continued existence depends on the fresh-water marsh snail Pomacea paludis, its only food. Preservation of some suitable marsh areas, as in Loxahatchee National Wildlife Refuge, is essential to the survival of this endangered species.

Sulkava, Pertti. VORKOMMEN UND NAHRUNG DER WALDOHREULE, ASIO OTUS (L.) IN ILMAJOKI (EP) IN DEN JAHREN 1955-1963. [OCCURRENCE AND NUTRITION OF ASIO OTUS (L.), IN ILMAJOKI (EP) DURING 1955 TO 1963.] Aquilo Ser. Zool. 2: 41-47. 1965. [From Biol. Abstr. 48(23), 1967. In German.] WR 129: 86

Tălpeanu, Matei. LES FALCONIFORMES DE ROUMANIE. [THE FALCONIFORMES OF ROMANIA.] Trav. Mus. Hist. Nat. Grigore Antipa 6: 329-338. 1966. [From Biol. Abstr. 48(20), 1967. In French with Romanian and Russian summ.] WR 129: 86
This order is represented in Romania by 36 spp.: 27 spp. of Accipitridae, 1 of Pandionidae, and 8 of Falconidae.

Tubbs, C. R. POPULATION STUDY OF BUZZARDS IN THE NEW FOREST DURING 1962-66. British Birds 60(10): 381-395, 1 fig. Oct. 1967. WR 129: 86
[Nature Conserv., Lyndhurst, Hampshire, England.] Summary: Data were collected during the five years 1962-66 on the population of buzzards Buteo buteo within 112.5 square miles of the New Forest, Hampshire. At least 33 or 34 pairs were consistently present in the study area during the breeding season each year. Prey collected from nests suggested that medium-sized birds (such as jackdaws Corvus monedula and jays Garrulus glandarius), as well as rabbits Oryctolagus cuniculus and wood mice Apodemus sylvaticus, probably constituted the main food sources during the study period. The breeding data obtained showed that clutches were comparatively small (average 1.8 eggs in 33 clutches in 1963-65) and that the output of young was low with failure to hatch and egg-breaking common. Ten addled eggs analysed for organo-chlorine insecticide residues revealed only very small quantities (mean total residues 1.85 p.p.m.). The evidence does not permit any correlation between breeding success and the known factors which might adversely affect it.

Wheeler, Richard J., and Louis E. Raice. NOTE ON THE PREDATORY BEHAVIOR OF THE BALD EAGLE. Murrelet 48(1): 20-21. Jan.-Apr. 1967. WR 129: 86
[Humboldt State Coll., Arcata, Calif.] "Haliaëtus leucocephalus."

Yamamoto, H. [MIMETIC THREATENING DISPLAY OF A SCREECH OWL, OTUS ASIO, AND A SUGGESTION TO ITS ROOSTING PLACE IN WINTER.] Tori 18: 189-193. 1967. [From Auk 84(4), 1967. In Japanese with English summ.] WR 129: 86

Belknap, John B. FOOD HABITS OF THE CROW. Kingbird 17(4): 200-201. Oct. 1967. WR 129: 87
[92 Clinton St., Gouverneur, N.Y.]

Berthold, Peter. ÜBER DEN FORTPFLANZUNGSZYKLUS SÜDWESTDEUTSCHER STARE (STURNUS VULGARIS L.) UND ÜBER BEDINGENDE FAKTOREN DER BRUTREIFE BEIM STAR. [ON THE REPRODUCTIVE CYCLE OF THE SOUTHWEST GERMAN STARLING (STURNUS VULGARIS L.) AND THE DETERMINING FACTORS IN THE SEXUAL MATURITY IN THE STARLING.] Vogelwarte 22(3/4): 236-274, illus. 1964. [From Biol. Abstr. 48(24), 1967. In German.] WR 129: 87

Besser, Jerome F., John W. De Grazio, and Joseph L. Guarino. COSTS OF WINTERING STARLINGS AND RED-WINGED BLACKBIRDS AT FEEDLOTS. J. Wildl. Mgmt. 32(1): 179-180. Jan. 1968. WR 129: 87
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: The cost of cattle rations eaten by birds at feedlots near Denver, Colorado, during the wintering season was estimated to be about $84.00 per 1,000 starlings (Sturnus vulgaris) and $2.00 per 1,000 red-winged blackbirds (Agelaius phoeniceus).

Ficken, Millicent S. INTERACTIONS OF A CROW AND A FLEDGLING COWBIRD. Auk 84(4): 601-602. Oct. 1967. WR 129: 87
[Univ. Wis.-Milwaukee.] The brown-headed cowbird (Molothrus ater) hopped toward the crow and made begging movements. After some hesitation, the crow seized and killed the cowbird.--Courtesy/ Paul A. Stewart.

Funderburg, J. B. COMMON CROWS DRINKING IN FLIGHT. Fla. Nat. 40: 66-67. 1967. [From Auk 84(4), 1967.] WR 129: 87

Gwinner, E. ÜBER DEN EINFLUSS DES HUNGERS UND ANDERER FAKTOREN AUF DIE VERSTECK-ACTIVITÄT DES KOLKRABEN. [ON THE INFLUENCE OF HUNGER AND OTHER FACTORS UPON HOARDING BY RAVENS.] Vogelwarte 23: 1-7. 1965. [From Ibis 109(4), 1967. In German.] WR 129: 87
Hungry, hand-reared, ravens Corvus corax will hoard more food than well fed ones. This had adaptive value in wild birds, since they will store more food in times of scarcity. An experience-independant preference for hoarding fat (over other foods) is shown. Fat, having a high nutrient value and stability during storage, is ideally suited for hoarding. During the first three days after hatching, parental hoarding of food for the young (primarily insects) is very intense. At this stage the parents eat little or none of the hoard.

Hamilton, William J., III, William M. Gilbert, Frank H. Heppner, and Roy J. Planck. STARLING ROOST DISPERSAL AND A HYPOTHETICAL MECHANISM REGULATING RHYTHMICAL ANIMAL MOVEMENT TO AND FROM DISPERSAL CENTERS. Ecology 48(5): 825-833, 1 fig. Late Summer 1967. WR 129: 87
[Univ. Calif., Davis.] "The hypothesis is that the major factor favoring increase in the dispersal distance from the core is depletion of nearby resources and the relaxation of resource exploitation at increased distances from it. This advantage of more distant radial dispersal must be balanced against the disadvantages of the increased time and energy expenditure required to reach more distant ranges."--Courtesy/ Paul A. Stewart.

Harriman, Arthur E. REJECTION THRESHOLDS FOR CITRIC ACID SOLUTIONS IN COWBIRDS, STARLINGS, AND RED-WING BLACKBIRDS. Am. Midland Nat. 79(1): 240-242. Jan. 1968. WR 129: 87
[Okla. State Univ., Stillwater.] Abstract: The degree of rejection for acid manifested by birds in laboratory drinking preference tests may be correlated with the acidic components of the customarily selected natural foods. In a test of this possibility, starlings, which feed on fruits and berries, were compared with two granivorous birds (cowbirds and red-wing blackbirds) in a series of 2-bottle tests with citric acid concentrations opposite distilled water. The starlings proved to be significantly less averse to drinking the test concentrations than were either the cowbirds or the red-wing blackbirds. The findings suggest that taste factors may contribute to dietary selection in birds.

Holyoak, David. BREEDING BIOLOGY OF THE CORVIDAE. Bird Study 14(3): 153-168, 6 figs. Sept. 1967. WR 129: 88

The laying season tends to be longer in the non-colonial than in the colonial species. Annual variations in laying dates are greatest in the jay, intermediate in jackdaw and magpie, and least in carrion crow and rook. It is suggested that these differences are related to differences in feeding ecology. Most species normally lay eggs daily. Magpies however often have intervals of 2 or 3 days between eggs, especially the earlier eggs of the clutch. Intervals of 2 and 3 days are also recorded for the chough. Variations in clutch-size are discussed in relation to geographical area, habitat and altitude. All of the species show a decline in clutch-size as the season advances. Seasonal variations in hatching success are demonstrated. In the carrion crow success declines as the season progresses, in the jay it improves, and in the magpie it rises to a peak and then falls. Possible reasons for these patterns are suggested. Causes of failure and nest-sites are briefly discussed.--From summ.

Perdeck, A. C. THE STARLING AS A PASSAGE MIGRANT IN HOLLAND. Bird Study 14(3): 129-152, 8 figs. Sept. 1967. WR 129: 88

[Inst. Ecol. Res., Arnhem, Netherlands.] An analysis of 2,000 recoveries of Sturnus vulgaris banded during autumn migration near the Hague during 1928-1962.

Rand, A. L. A COMMON GRACKLE LEARNING TO SOAK BREAD. Wilson Bull. 79(4): 455-456. Dec. 1967. WR 129: 88

[Field Museum Nat. Hist., Chicago, Ill.] A common grackle (Quiscalus quiscula) carried dry bread to water, dropped it into the water, and later ate it.--Courtesy/ Paul A. Stewart.

Wilson, Nixon. CARNUS HEMAPTERUS NITZSCH (DIPTERA: MILICHIIDAE) FROM STARLINGS IN INDIANA. Am. Midland Nat. 79(1): 251-252. Jan. 1968. WR 129: 88

[Bernice P. Bishop Museum, Honolulu, Hawaii.]

OTHER BIRDS

Aldrich, John W. POPULATION CHARACTERISTICS AND NOMENCLATURE OF THE HERMIT THRUSH. Proc. US Natl. Museum 124(3637): 1-33, 4 figs. 1967. WR 129: 88

[Bur. Sport Fisheries & Wildl., Washington, D.C.]

Ashmole, N. Philip. SEXUAL DIMORPHISM AND COLONIAL BREEDING IN THE WOODPECKER CENTURUS STRIATUS. Am. Naturalist 101(920): 353-356. July-Aug. 1967. WR 129: 88

[Yale Univ., New Haven, Conn.]

Beishebaev, K. [NYCTALUS NOCTULA IN THE WALNUT FORESTS OF SOUTH KIRGHIZIA.] Zool. Zhur. 45(10): 1583. 1966. [From Biol. Abstr. 48(21), 1967. In Russian.] WR 129: 88

Blume, Dieter. WEITERE BEOBACHTUNGEN AN BUNTSPECHTEN (DENDROCOPOS MAJOR) UND ANDEREN SPECHTARTEN IM HESSISCHEN HINTERLAND. [FURTHER OBSERVATIONS OF THE GREAT SPOTTED WOODPECKER (DENDROCOPUS MAJOR) AND OTHER WOODPECKERS IN THE HESSIAN HINTERLANDS.] Ornithol. Mitteil. 17(9): 175-180, 4 figs. Sept. 1965. In German. WR 129: 88

[Ernst-Leinbach Strasse 8, Gladenbach, (Hessen), Germany.]

Cuisin, M. [THE ACTIVITY OF THE BLACK WOODPECKER (DRYOCOPUS MARTIUS) IN THE FOREST.] Rev. Forest. Franc. 1: 1-12. Jan. 1967. [From Bibliog. Agr. 31 (11), 1967. In French.] WR 129: 88

"Damage to the trees."

Gould, Patrick J., and Warren B. King. RECORDS OF FOUR SPECIES OF PTERODROMA FROM THE CENTRAL PACIFIC OCEAN. Auk 84(4): 591-594. Oct. 1967. WR 129: 89
[Smithsonian Inst., Washington, D.C.] Reports collecting of specimens of following species: Murphy's petrel (P. ultima), Tahiti petrel (P. rostrata), Kermadec petrel (P. neglecta), and South Trinidad petrel (P. arminjoniana).--Courtesy/ Paul A. Stewart.

Lavery, H. J., and N. M. Haysom. SOME FOODS OF CORMORANTS IN NORTH QUEENSLAND. Queensland J. Agr. Sci. 20(4): 543-545, 1 fig. Dec. 1963. WR 129: 89
[Animal Health Sta., P.O. Box 1085, Townsville, 4810, Queensland, Australia.]

Lowther, James K., and Robert E. Walker. SEX RATIOS AND WING CHORD LENGTHS OF PINE SISKINS (SPINUS PINUS) IN ALGONQUIN PARK, ONTARIO. Canadian Field-Nat. 81(3): 220-222. July-Sept. 1967. WR 129: 89
[Bishop's Univ., Lennoxville, Quebec, Canada.]

Peiponen, V. A. THE DIURNAL HETEROTHERMY OF THE NIGHTJAR (CAPRIMULGUS EUROPAEUS LINN.). Ann. Acad. Sci. Fenn. Ser. A IV 100. 35 p. 1966. [From Ibis 109(4), 1967.] WR 129: 89

REPTILES & AMPHIBIANS

Acholonu, A. D. STUDIES ON THE ACANTHOCEPHALAN PARASITES OF LOUISIANA TURTLES. Bull. Wildl. Disease Assoc. 3(1): 40. Jan. 1967. WR 129: 89
[Southern Univ., Baton Rouge, La.]

Banta, Benjamin H., and Gary Carl. DEATH-FEIGNING BEHAVIOR IN THE EASTERN GRAY TREEFROG HYLA VERSICOLOR VERSICOLOR. Herpetologica 23(4): 317-318, 1 fig. 30 Dec. 1967. WR 129: 89
[Mich. State Univ., East Lansing.]

Bragg, Arthur N. RECENT STUDIES ON THE SPADEFOOT TOADS (SCAPHIOPUS, DISTRIBUTION, EVOLUTION, BEHAVIOR). Bios 38(2): 75-84, illus. 1967. [From Biol. Abstr. 48(23), 1967.] WR 129: 89
[Univ. Okla., Norman.]

Brown, Herbert Allen. TEMPERATURE ADAPTATION AND EVOLUTIONARY DIVERGENCE IN ALLOPATRIC POPULATIONS OF THE SPADEFOOT TOAD, SCAPHIOPUS HAMMONDI. Ph.D. thesis, Univ. Calif. (Riverside). 128 p. 1966. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 89

Buide, Mario S. REPTILES DE LA PENINSULA HICACOS. [REPTILES OF THE HICACOS PENINSULA, MATANZAS, CUBA.] Poeyana Inst. Biol. (La Habana) Ser. A 21: 1-12. 1966. [From Biol. Abstr. 48(20), 1967. In Spanish with English summ.] WR 129: 89
[Jard. Zool., Havana, Cuba.] Observations on behavior, ecology and distribution are given. The peninsula is located to the north of Matanzas Province.

Bustard, H. Robert. ACTIVITY CYCLE AND THERMOREGULATION IN THE AUSTRALIAN GECKO GEHYRA VARIEGATA. Copeia 1967(4): 753-758, 5 figs. 8 Dec. 1967. WR 129: 89
[Australian Natl. Univ., Canberra, Australia.] Abstract: Maximum activity of Gehyra variegata takes place in the three hr following sunset. During the day, lizards actively thermoregulate under cover by moving beneath the bark of their tree stump habitat to keep below the bark being heated by the sun and by pressing the body to the inner surface of the bark. The minimum foraging temperature was calculated, on the basis of aktograph studies, as 18° C and is more important in relation to gekkonid ecology than mean preferred temperature since it is more likely to be a limiting factor in their distribution.

Bustard, H. Robert. GEKKONID LIZARDS ADAPT FAT STORAGE TO DESERT ENVIRONMENTS. Science 158(3805): 1197-1198. 1 Dec. 1967 WR 129: 90
[Australian Natl. Univ., Canberra, Australia.] Abstract: Coleonyx v. variegatus is adapted to feed voraciously after deprivation of food and to withstand long periods without food. In 4 days specimens converted enough food into reserves to increase their weight by about 50%. Total deprivation of food resulted in very gradual loss of weight, which, if maintained, would result in 4 days of feeding being sufficient to sustain the animal for periods of 6 to 9 months.

Bustard, H. Robert. REPRODUCTION IN THE AUSTRALIAN GEKKONID GENUS OEDURA GRAY 1842. Herpetologica 23(4): 276-284, 3 figs. 30 Dec. 1967. WR 129: 90
[Australian Natl. Univ., Canberra, Australia.]

Carpenter, Charles C. COMPARATIVE BEHAVIOR OF THE GALAPAGOS LAVA LIZARDS (TROPIDURUS). Proc. Symposia Galapagos Internat. Sci. Project 7-18 Jan. 1964, Berkeley, Calif., Univ. Calif. Press. p. 269-273. 1966. [From Biol. Abstr. 48(20), 1967.] WR 129: 90

Carpenter, Charles C. DISPLAY PATTERNS OF THE MEXICAN IGUANID LIZARDS OF THE GENUS UMA. Herpetologica 23(4): 285-293, 1 fig. 30 Dec. 1967. WR 129: 90
[Univ. Okla., Norman.]

Davis, John. GROWTH AND SIZE OF THE WESTERN FENCE LIZARD (SCELOPORUS OCCIDENTALIS). Copeia 1967(4): 721-731, 4 figs. 8 Dec. 1967. WR 129: 90
[Univ. Calif., Carmel Valley.]

Echternacht, Arthur C. ECOLOGICAL RELATIONSHIPS OF TWO SPECIES OF THE LIZARD GENUS CNEMIDOPHORUS IN THE SANTA RITA MOUNTAINS OF ARIZONA. Am. Midland Nat. 78(2): 448-459, 1 fig. Oct. 1967. WR 129: 90
[Univ. Kans., Lawrence.] Abstract: Ecological relationships of locally sympatric populations of the southern whiptail (Cnemidophorus tigris gracilis Baird and Girard), and the Chihuahua whiptail (Cnemidophorus exsanguis Lowe) on the Santa Rita Experimental Range, Arizona, were studied intermittently in 1962 and for their entire period of activity in 1963. Although analysis of stomach contents (consisting largely of termites) and daily activity pattern reveal little divergence between the two species, differences in foraging behavior may reflect differences in the kinds of food resources being exploited. Cnemidophorus exsanguis is an all-female species and has a clutch size half again as great as that of C. tigris. The indications are that competition does occur.

Ehrenfeld, David William. THE SEA-FINDING ORIENTATION OF THE GREEN TURTLE (CHELONIA MYDAS). Ph.D. thesis, Univ. Fla. 103 p. 1966. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 90
It was concluded that: 1. A direct view of the sea is not required in sea-finding orientation. 2. There is no evidence that an innate, compass direction preference based on celestial cues is involved in sea-finding. 3. Perception of polarized light does not play a role in the orientation. 4. It is unlikely that true color discrimination forms the behavioral basis of the orientation. Red sensitivity appears to be considerably less than in freshwater turtles. 5. Partly because of its myopia, the green turtle relies on an orientation method that resembles the tropotaxis of some invertebrates. This involves inspection of the surrounding landscape and a direction choice based on the relative locations of the open and bright (seaward) areas of the horizon versus the darker elevated outline of dunes and trees.

Elkan, E., and P. Zwart. THE OCULAR DISEASE OF YOUNG TERRAPINS CAUSED BY VITAMIN A DEFICIENCY. Pathol. Vet. 4(3): 201-222, 18 figs. 1967. With German summ. WR 129: 91
[Shrodells Hospital, Watford, Hertfordshire, England.] Summary: The histopathology of a disease is described which commonly affects young terrapins of the genera Clemmys, Pseudemys, and Graptemys kept in captivity. The first signs noticed are swelling of the eyelids and refusal to feed. Investigation of 32 terrapins revealed extensive epithelial metaplasia in the ophthalmic glands and in the excretory ducts of the liver, pancreas, and kidneys. The localization and the type of metaplasia seen are similar to those which occur in man, cattle, horses, sheep, and fowl suffering from avitaminosis A. Occasional successes of treatment with vitamin A support the assumption that the mortality is mainly due to avitaminosis A and should be treated or prevented accordingly.--Courtesy/ William H. Stickel.

Fleharty, Eugene D. COMPARATIVE ECOLOGY OF THAMNOPHIS ELEGANS, T. CYRTOPSIS, AND T. RUFIPUNCTATUS IN NEW MEXICO. Southwestern Nat. 12(3): 207-229, 9 figs. 31 Oct. 1967. WR 129: 91
[Fort Hays Kans. State Coll., Hays.]

Freeman, John R. FEEDING BEHAVIOR OF THE NARROW-STRIPED DWARF SIREN PSEUDOBRANCHUS STRIATUS AXANTHUS. Herpetologica 23(4): 313-314. 30 Dec. 1967. WR 129: 91
[Univ. Chattanooga, Chattanooga, Tenn.]

Gaizauskiene, J. [DATA ON THE AGE COMPOSITION OF A RANA TEMPORARIA POPULATION IN THE LITHUANIAN SSR AND ITS MORPHOLOGY.] Trudy Akad. Nauk Lit. SSR 1(39): 91-96, illus. 1966. [From Biol. Abstr. 48(22), 1967. In Russian with Lithuanian summ.] WR 129: 91

Gallardo, Jose M. THE SPECIES BUFO GRANULOSUS SPIX (SALIENTIA: BUFONIDAE) AND ITS GEOGRAPHIC VARIATION. Bull. Museum Comp. Zool. Harvard Univ. 134(4): 107-138, illus. 1965. [From Biol. Abstr. 48(18), 1967.] WR 129: 91
[Mus. Argentina Cienc. Nat., Buenos Aires, Argentina.]

Gibbons, James Whitfield. POPULATION DYNAMICS AND ECOLOGY OF THE PAINTED TURTLE, CHRYSEMYS PICTA. Ph.D. thesis, Mich. State Univ. 123 p. 1967. [From Dissertation Abstr. 28(5B), 1967.] WR 129: 91

Gibbons, J. Whitfield. VARIATION IN GROWTH RATES IN THREE POPULATIONS OF THE PAINTED TURTLE, CHRYSEMYS PICTA. Herpetologica 23(4): 296-303, 3 figs. 30 Dec. 1967. WR 129: 91
[Univ. Ga. Savannah River Ecol. Lab., P.O. Box A, Aiken, S.C.]

Healy, William Ryder. THE EFFECT OF ALTERNATIVE LIFE HISTORIES ON POPULATION STRUCTURE IN THE COMMON NEWT NOTOPHTHALMUS V. VIRIDESCENS. Ph.D. thesis, Univ. Mich. 84 p. 1966. [From Dissertation Abstr. 28(1B), 1967.] WR 129: 91

Heckrotte, Carlton. RELATIONS OF BODY TEMPERATURE, SIZE, AND CRAWLING SPEED OF THE COMMON GARTER SNAKE, THAMNOPHIS S. SIRTALIS. Copeia 1967(4): 759-763, 3 figs. 8 Dec. 1967. WR 129: 91
[State Univ. N.Y., Binghamton.] Abstract: A multiple regression analysis of the maximum crawling speed of Thamnophis s. sirtalis indicated that speed increase was associated with higher body temperature and increased body weight. Speed increase was associated with increasing length up to about 45 cm; longer snakes showed a speed decrease. A comparison of maximum and cruising speeds showed that the former was temperature dependent, while the latter was temperature independent or nearly so.

Hoddenbach, Gerard A,, and Joseph R. Lannom, Jr. NOTES ON THE NATURAL HISTORY OF THE MEXICAN GECKO, PHYLLODACTYLUS TUBERCULOSUS. Herpetologica 23 (4): 293-296. 30 Dec. 1967. WR 129: 92
[Univ. Calif., Los Angeles.] Morphology and reproductive features.

Hunsaker, Don, II, and Paul Breese. HERPETOFAUNA OF THE HAWAIIAN ISLANDS. Pacific Sci. 21(3): 423-428. 1967. [From Biol. Abstr. 48(24), 1967.] WR 129: 92
[San Diego State Coll., San Diego, Calif.] A survey of the herpetofauna of the Hawaiian Islands was conducted during 1962 to determine any changes that might have occurred in the previous 20 years.

Jordan, O. Ray. THE OCCURRENCE OF THAMNOPHIS SIRTALIS AND T. RADIX IN THE PRAIRIE-FOREST ECOTONE WEST OF ITASCA STATE PARK, MINNESOTA. Herpetologica 23 (4): 303-308, 1 fig. 30 Dec. 1967. WR 129: 92
[Tenn. Technol. Univ., Cookeville.]

Karstad, Lars. FATAL POISONING OF FOX SNAKE (ELAPHE VULPINA) BY FEEDING A TOAD (BUFO AMERICANUS). Bull. Wildl. Disease Assoc. 3(2): 73-74. Apr. 1967. WR 129: 92
[Ontario Vet. Coll., Guelph, Canada.]

King, Frederic Wayne. COMPETITION BETWEEN TWO SOUTH FLORIDA LIZARDS OF THE GENUS ANOLIS. Ph.D. thesis, Univ. Miami. 104 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 92
The presence of several introduced species of Anolis in south Florida permits studies on interspecific competition between these species and the native Anolis carolinensis. The ecology of an introduced species (Anolis distichus distichus) was compared to that of the native species to determine if the niches of the two were similar enough to cause competition. The ecology of carolinensis in pure and mixed populations was compared to determine what adaptation or change had occurred in the carolinensis of the mixed population as a result of competition. The distribution, habitat preferences, activity cycles, thermoregulation, foods consumed, reproduction, population density and territoriality, growth, size, and longevity (and the behavior associated with each of these topics) of each species was investigated. The results indicate that competition does occur, and causes a minor change in the habitat preference of the native carolinensis.

Knopf, Garry Nolan. REPRODUCTIVE BEHAVIOR AND ECOLOGY OF THE UNISEXUAL LIZARD, CNEMIDOPHORUS TESSELATUS SAY. Ph.D. thesis, Univ. Colo. 121 p. 1966. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 92

Kochva, Elazar, Miriam Shayer-Wollberg, and Raya Sobol. THE SPECIAL PATTERN OF THE VENOM GLAND IN ATRACTASPIS AND ITS BEARING ON THE TAXONOMIC STATUS OF THE GENUS. Copeia 1967(4): 763-772, 8 figs. 8 Dec. 1967. WR 129: 92
[Tel-Aviv Univ., Tel-Aviv, Israel.]

Landreth, Hobart F., and Denzel E. Ferguson. NEWTS: SUN-COMPASS ORIENTATION. Science 158(3807): 1459-1461, 3 figs. 15 Dec. 1967. WR 129: 92
[Miss. State Univ., State College.] Abstract: Rough-skinned newts, captured from breeding ponds, oriented on courses that would have intersected the familiar shorelines at right angles, when released in a circular arena on land under the sun or moon. Pondward migrants oriented similarly. Reorientation failed under complete cloud cover and after 7 days of darkness in an environmental chamber, but persisted in newts whose eyes were excised and in those displaced more than 27 kilometers in darkness. Both normal and blind animals compensated for displacement in sunshine. Preliminary evidence suggests that alternative light receptors in blinded animals may be associated with the optic tectum. No evidence of olfactory guidance was observed.

Licht, Paul. RESPONSE OF THE THERMAL PREFERENDUM AND HEAT RESISTANCE TO THERMAL ACCLIMATION UNDER DIFFERENT PHOTOPERIODS IN THE LIZARD ANOLIS CAROLINENSIS. Am. Midland Nat. 79(1): 149-158, 5 figs. Jan. 1968. WR 129: 93
[Univ. Calif., Berkeley.]

Modha, M. L. THE ECOLOGY OF THE NILE CROCODILE (CROCODYLUS NILOTICUS LAURENTI) ON CENTRAL ISLAND, LAKE RUDOLF. East African Wildl. J. 5: 74-95, 5 figs. Aug. 1967. WR 129: 93
[Kenya Game Dept., P.O. Box 241, Nairobi, Kenya.] Territorial behavior, courtship and mating, nests and nesting habits of the Nile crocodile are discussed.

Nelson, Craig E., and John R. Meyer. VARIATION AND DISTRIBUTION OF THE MIDDLE AMERICAN SNAKE GENUS, LOXOCEMUS COPE (BOIDAE?). Southwestern Nat. 12 (4): 439-453, 5 figs. 31 Dec. 1967. WR 129: 93
[Indiana Univ., Bloomington.]

Ozeti, Necla. EGE BOLGESINDE BULUNAN TRITURUS VULGARIS (LINNAEUS) UN MORFOLOJISI, TAKSONOMIK DURUMU, MEVSIMLIK FAALIYETI VE TERMOTAKTIK DAVRANISI UZERINDE ARASTIRMALAR. [STUDIES ON THE MORPHOLOGY, TAXONOMIC POSITION, SEASONAL ACTIVITY AND THERMOTAXIC BEHAVIOUR OF TRITURUS VULGARIS (LINNAEUS) IN THE AEGEAN REGION.] Ege Univ. Fac. Sci. Sci. Rep. 15: 5-49, illus. 1964. [From Biol. Abstr. 48(23), 1967. In Turkish with English summ.] WR 129: 93

Pennock, Lewis Arthur. A KARYOTYPE STUDY OF PARTHENOGENETIC SPECIES IN THE TEIID LIZARD GENUS CNEMIDOPHORUS FROM SOUTHWESTERN UNITED STATES. Ph.D. thesis, Univ. Colo. 96 p. 1966. [From Dissertation Abstr. 28(4B), 1967.] WR 129: 93

Perret, Jean-Luc. LES AMPHIBIENS DU CAMEROUN. [THE AMPHIBIA OF CAMEROON.] Zool. Jahrb. Abt. Syst. Okol. Geogr. Tiere 93(3): 289-464. 1966. [From Biol. Abstr. 48(22), 1967. In French.] WR 129: 93
[Univ. Neuchâtal, Neuchâtel, Switzerland.]

Rabalais, Francis Cleo. THE TREMATODES OF THE COLUBRIDAE AND CROTALIDAE IN LOUISIANA. Ph.D. thesis, La. State Univ. 157 p. 1967. [From Dissertation Abstr. 28(5B), 1967.] WR 129: 93

Ream, Catherine Hardy. SOME ASPECTS OF THE ECOLOGY OF PAINTED TURTLES, LAKE MENDOTA, WISCONSIN. Ph.D. thesis, Univ. Wis. 105 p. 1967. [From Dissertation Abstr. 28(3B), 1967.] WR 129: 93

Rose, Francis L., and Clyde D. Barbour. ECOLOGY AND REPRODUCTIVE CYCLES OF THE INTRODUCED GECKO, HEMIDACTYLUS TURCICUS, IN THE SOUTHERN UNITED STATES. Am. Midland Nat. 79(1): 159-168, 3 figs. Jan. 1968. WR 129: 93
[Texas Technol. Coll., Lubbock.]

Rubin, David. AMPHIBIANS AND REPTILES OF VIGO COUNTY, INDIANA. Proc. Ind. Acad. Sci. 75: 279-280. 1965. [From Biol. Abstr. 48(21), 1967.] WR 129: 93
[Ind. State Univ., Terre Haute.] Abstract only.

Saxon, J. G., H. G. Applegate, and J. M. Inglis. MALE CNEMIDOPHORUS TESSELATUS SAY FROM PRESIDIO, TEXAS. Texas J. Sci. 19(2): 233-234, illus. 1967. [From Biol. Abstr. 48(23), 1967.] WR 129: 93
[Texas A & M Univ., College Station.]

Schwartz, Albert. SNAKES OF THE GENUS ALSOPHIS IN PUERTO RICO AND THE VIRGIN ISLANDS. Natuurwetensch. Studierking Suriname Ned. Antillen Uitgaven 23(45): 177-227, illus. 1966. [From Biol. Abstr. 48(22), 1967.] WR 129: 93

Shoop, C. Robert. RELATION OF MIGRATION AND BREEDING ACTIVITIES TO TIME OF OVULATION IN AMBYSTOMA MACULATUM. Herpetologica 23(4): 319-321. 30 Dec. 1967. WR 129: 94
[Wellesley Coll., Wellesley, Mass.]

Shoop, C. Robert, and Gerald E. Gunning. SEASONAL ACTIVITY AND MOVEMENTS OF NECTURUS IN LOUISIANA. Copeia 1967(4): 732-737, 1 fig. 8 Dec. 1967. WR 129: 94
[Wellesley Coll., Wellesley, Mass.] Abstract: The seasonal activity and movements of Necturus maculosus louisianensis and N. b. beyeri were studied in Louisiana from 1959 to 1962 and again in December 1965 and January 1966. Cover preferences were similar in both forms, the animals usually being found in and around obstructions in streams; both species are active throughout the year. There was a negative correlation between fish activity and foraging away from cover by both species. There was no indication of summer dormancy. Fifteen N. beyeri were recaptured within 215 ft of their original capture and release point after up to 724 days. Twenty-three N. maculosus were captured within 840 ft of their original capture point after up to 2089 days. Of 33 N. maculosus displaced downstream, four were recaptured near the release area; one animal returned to its previous capture point. Most of the displaced animals headed upstream instead of seeking shelter as do animals released near original capture sites.

Spright, Tom M. POPULATION STRUCTURE AND BIOMASS PRODUCTION BY A STREAM SALAMANDER. Am. Midland Nat. 78(2): 437-447, 1 fig. Oct. 1967. WR 129: 94
[Univ. Wash., Seattle.] Abstract: A life-table based on collections from a population of Desmognathus fuscus in Gaston Co., North Carolina, is presented. An estimate based on the weight of captured individuals predicts that salamanders from each clutch will provide 17.5 g of salamander biomass to other community predators and decomposers, or an average of 1.8 g per year. Population density is estimated to be between 0.4 and 1.4 salamanders per square meter of stream bed. The corresponding average annual production would then fall between 0.1 and 0.3 g/m^2 of stream bed.

Stebbins, Robert C., Jerold M. Lowenstein, and Nathan W. Cohen. A FIELD STUDY OF THE LAVA LIZARD (TROPIDURUS ALBEMARLENSIS) IN THE GALÅPAGOS ISLANDS. Ecology 48(5): 839-851, 7 figs. Late Summer 1967. WR 129: 94
[Univ. Calif., Berkeley.] The following are discussed: habitat, territorial behavior, daily cycle of activity, beds, responses to temperature changes, reproduction, sexual differences, sex ratio, size at sexual maturity, numbers of eggs per clutch, mating, egg sites, polygamy, and food habits.--Courtesy/ Paul A. Stewart.

Taylor, Harry L., J. Martin Walker, and Philip A. Medica. MALES OF THREE NORMALLY PARTHENOGENETIC SPECIES OF TEIID LIZARDS (GENUS CNEMIDOPHORUS). Copeia 1967(4): 737-743, 1 fig. 8 Dec. 1967. WR 129: 94
[Regis Coll., Denver, Colo.]

Toporkova, A. Ya. [OBSERVATIONS ON THE RELATIVE GROWTH RATES OF AMPHIBIA IN NATURAL POPULATIONS.] Uch. Zap. Ural Univ. 47: 103-106. 1966. [From Biol. Abstr. 48(18), 1967, from Referat. Zhur., Biol., 1967, no. 2I232. Transl. of Russian abstr.] WR 129: 94

Ubelaker, John E., Donald W. Duszynski, and Donald L. Beaver. OCCURRENCE OF THE TREMATODE, GLYPTHELMINS PENNSYLVANIENSIS CHENG, 1961, IN CHORUS FROGS, PSEUDACRIS TRISERIATA, IN COLORADO. Bull. Wildl. Disease Assoc. 3(4): 177. Oct. 1967. WR 129: 94
[Colo. State Univ., Fort Collins.]

Whitaker, A. H. BAITING PITFALL TRAPS FOR SMALL LIZARDS. Herpetologica 23 (4): 309-310. 30 Dec. 1967. WR 129: 95
[P.O. Box 30466, Lower Hutt, New Zealand.] The successful use of canned fruit to bait pitfall traps set to catch skinks and geckos.

Whitaker, A. H. LOCATING NOCTURNAL GECKOS BY SPOTLIGHT. Herpetologica 23 (4): 310-311. 30 Dec. 1967. WR 129: 95
[P.O. Box 30466, Lower Hutt, New Zealand.]

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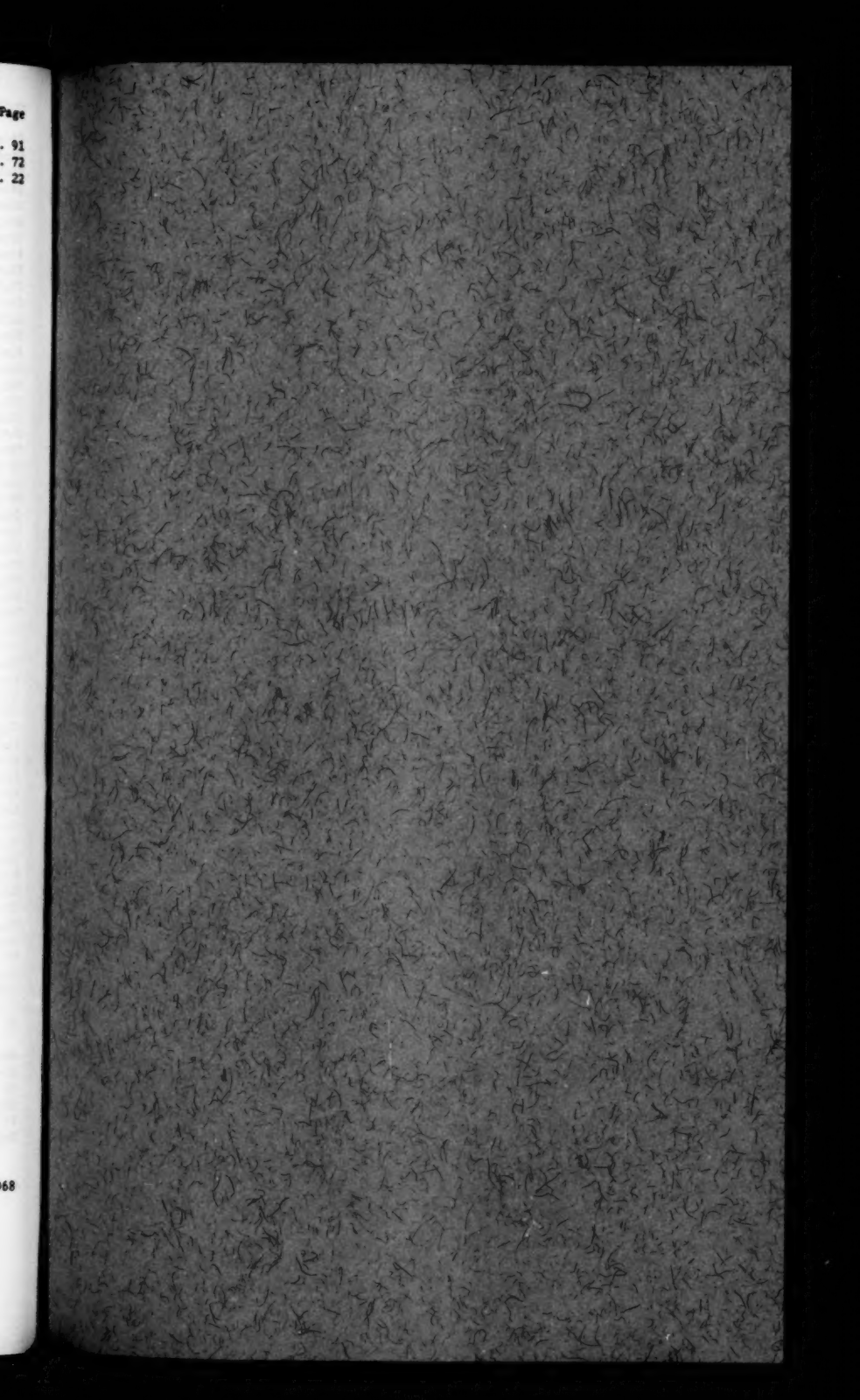

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As America's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States, now and in the future.

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